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PLEURO-PNEUMONIA ZYMOTICA: ITS CHARACTERISTICS AND PATHOLOGICAL ANATOMY.

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I AM induced to offer the following remarks, not so much with the view of promulgating any new theory in connection with this very prevalent and fatal epizoöty; but in the hope that I may be enabled to strike a chord in the minds of some of my professional brethren, which shall vibrate and ultimately lead to a more perfect acquaintance with the pathology of the disease. Moreover, I am aware that there are numbers of veterinary surgeons who, while able to distinguish a Pleuro-pneumonia lung without any hesitation, would be very much puzzled if asked in a court of law to give an intelligible description of the condition of such a lung, and of the changes which have taken place in its structure.

It is not my intention to refer, at any length, to the microscopical appearances of the diseased structures, but to point out those characteristics which are cognisable to the naked eye; neither shall I refer, except for special reasons, to the symptoms of the disease itself.

As I shall frequently have to speak of two other diseases, I shall, for the sake of brevity, employ abbreviations: thus,

Sthenic or *Sporadic* Pleuro-pneumonia will be designated P. p.; *Epizoötic* or *Zymotic* Pleuro-pneumonia, Zy. p. p.; Purpura Hæmorrhagica, P. h.

I have elsewhere endeavoured to show that any serious derangement in the balance of the sanguiferous constituents inevitably leads to one or more of three conditions,—viz., *effusion of serum, exudation of lymph,* or *extravasation of blood;* and that similar results are induced by depravity of the nutrient fluid,—*i.e.* by the introduction into it of organic or septic germs. Extravasation of blood is more likely to result from this cause, owing to nutritive interference with and structural alteration of the capillary walls, which are thereby rendered incapable of withstanding the pressure of the blood in their interior, give way, and allow of the passage of their contents into the surrounding tissues, the vitality of which is frequently, and, more often than otherwise, permanently destroyed.

In the disease under consideration, effusion, exudation, and extravasation, are all present, and result from the zymotic "action," in the blood of a specific virus or germ, of the actual nature of which we know little.

That it is a true "blood-disease," and distinct from P. p., I think I shall have no difficulty in proving; and further, that with the exception of the latter being devoid (as a rule) of infectious or contagious attributes, it is intimately allied to Purpura Hæmorrhagica of the horse.

As to the character or residence of the propagating germ of Zy. p. p., I have not yet sufficient evidence to enable me to speak with absolute certainty; but I have been enabled to detect microzymes in the secondary pleural exudations, though I have not seen them in the parenchyma of the lungs. In the systemic muscles I have also observed, microscopically, similar bodies. To the latter fact, however, I do not attach much importance, as in this situation these microzymes are seen in many zymotic affections.

As to the differential characteristics of P. p. and Zy. p. p., I shall in this place call attention, principally, to those which are observable during the life of the animal. P. p. is of a sthenic, Zy. p. p. of an asthenic character; P. p. occurs only as a sporadic,

Zy. p. p. as an epizoötic affection. In P. p. abortion seldom takes place; in Zy. p. p. it is frequent; in P. p. the lung (or its central portions) is attacked *en masse;* in Zy. p. p. it is diseased in patches (more or less circumscribed), frequently located in the borders, and indicates different periods of existence. P. p. is not accompanied by albuminous or serous effusions into the muscular tissue of the body, neither are the lymphatic glands of the thorax so much diseased; while the inflammatory products are not so acrid in their character as in Zy. p. p.

In P. p. there is seldom any want of correlation between the pulse, respiration, and temperature; in Zy. p. p. the pulse may register 60, and the respiration 12 per minute; and the temperature may run up to 105° or 106°; in P. p. the symptoms are asthenic, the attack sudden, and preceded by congestion; the injured lung tends to *organative* changes, and may be functionally restored; and the disease exhibits a certain amount of amenability to the action of medicinal measures. In Zy. p. p. the symptoms are little marked; the attack is insidious, and not preceded by congestion; the injured lung tends to *degenerative* changes, and is never functionally restored; while the progress of the disease is very slightly controlled by the action of medicines. P. p. has no incubative stage, and is neither infectious nor contagious; Zy. p. p. has a well defined, though extremely uncertain incubatory stage, and is alike contagious (by actual cohabitation) and infectious. In P. p. the primary effusion is of a plastic, in Zy. p. p. of an aplastic character.

The *post-mortem* differences will be considered hereafter.

In the analysis of the relative characters of Zy. p. p. and P. h., we observe that they are both the result of a morbid or poisoned condition of the blood, either from atmospheric germs, self-propagation of deleterious matter within the blood, or a loss of equilibrium in its constituents; thereby rendering it incapable of preserving its own integrity or that of the tissues it supplies. Both require much the same course of treatment; both are most virulent after debilitating diseases; both are most prevalent in unhealthy or impure states of the atmosphere; each is marked by local or systemic dropsies, exudations, or extravasations; both are notable for the absence of inflammatory symptoms;

both show a tendency to terminate in vicarious Diarrhœa; in each the victim dies either from asphyxia, as the result of serous effusion into the bronchia—which effusions become converted into foam by the passing to and fro of the air in respiration, or from non-oxidation of the blood owing to the amount of lung structure destroyed. In both (*i.e.* when the lungs are affected in P. h.) the earlier *post-mortem* symptoms are analogous; any slight difference which may exist being accounted for by the variation in the structure of the lungs in the two animals. In each, minute stellate-shaped hyperæmic spots exist in the lungs, due to congestion within, and ultimately rupture of the coats of the plexuses of vessels around the air-cells, with their converging and diverging capillaries. In both the bronchial mucous membrane will be found studded with scarlet spots (*ecchymoses*); and frequently mucus, mixed with blood, is lodged in the minute bronchia: this condition more particularly existing in the sound —or comparatively sound—lung after the other has become involved to a considerable extent in the diseased action. In Zy. p. p. the larger ecchymoses in the tracheal and bronchial mucous membrane undergo an exactly similar change (viz., ulceration) as do those in the Schneiderian and bronchial membranes in P. h. In P. h. the lungs present as distinctly a "marbled" character—allowing for the difference in structure—as they do in Zy. p. p., and are nearly as heavy and as full of serum. The disintegrated condition of the muscular fasciculi, where ecchymosis exists in P. h., has its analogue in the condition of the parenchyma of the lung in Zy. p. p. In each the systemic muscles are altered in character, *i.e.* are carbonaceous or dropsical, and the lungs, unless they are only slightly affected, are never restored to their original condition. In both the pulmonary lobes are destroyed, not by the pressure of the interlobular effusion, and subsequent exudation and hyperplasy, but by interlobular effusion and extravasation.

We do not see local external sloughs in Zy. p. p., as in P. h., simply because muscular extravasation seldom takes place in the superficies of the body in the former. The marked difference in the two affections lies in the fact that P. h. primarily tends to local and external manifestations of its existence, terminating in

septicæmic Pneumonia or vicarious enteric disease; the reverse being the case in Zy. p. p., except in some instances where death follows as the result of Diarrhœa, brought on by the same vicarious enteric glandular affection as in P. h.

Post-Mortem Appearances.

Before considering these in detail it will be as well to glance at the specific *post-mortem* differences existing between Zy. p. p. and other diseases with which it may be confounded. These diseases are: *a.* Pleuro-Pneumonia; *b.* Pulmonary consolidation following sub-acute inflammation, as the result of irritation produced by foreign bodies or parasites. The subsequent degenerative changes in a Zy. p. p. lung may be confounded with tubercle and degenerated hydatid cysts; these I shall contrast in due course.

A Zy. p. p. lung is distinguished from that of P. p. by greater weight (even in the early stages), and friability; by being much paler in colour externally, and variegated—mottled—internally; by different progressive stages of disease going on in the same lung: thus a section may show healthy lung tissue, interlobular effusion, red, black, and grey hepatization, marbled and brick-like degeneration, sphacelus; by being often diseased in patches; by the serum showing a greater tendency to gravitate to the lower and healthy portions of the lung, giving to the parts into which it has gravitated a greyish-coloured and solidified character not unlike veal in appearance, without any distinct interlobular or sub-pleural effusion, and without absolute destruction of the parenchyma; by the extensive interlobular effusion, exudation and hyperplasy; by the transudation of large quantities of serum when the lung is incised or submitted to pressure—this serum coagulating on exposure to the atmosphere; by the ulcerations and ecchymoses of the bronchial mucous membrane; and by the condition of the thoracic lymphatic vessels and glands.

In P. p. the lung, both externally and internally, as also the lining membrane of the bloodvessels and the bronchial mucous membrane, is uniformly black in colour, devoid of the characteristics above-mentioned; it may crepitate slightly on pressure; when hepatized it is usually of a dark-grey colour. A mortified

P. p. lung is intensely black, and the bronchial mucous membrane of a greenish hue; a mortified Zy. p. p. lung is of a brick-red colour, and very friable; and, finally, while degenerative processes, when they commence, proceed more rapidly in P. p., organative changes are more stable.

b. Consolidated lung, resulting from Entozoic Pneumonia, presents somewhat the appearance of fœtal lung. The pleura is not often involved; the bronchial mucous membrane is not ulcerated; a section is parti-coloured—grey and red; the lung is not so heavy, does not exude much serum when pressed, is firmer, not so friable, does not show the same tendency to degeneration, and does not degenerate *en masse*, but in small circumscribed patches, leading to the formation of lobular abscesses; and filaria are found, either fully matured in the bronchial tubes, or as embryos, with eggs (distinguished microscopically) in the consolidated lobules. If the consolidation results from the accidental introduction of minute foreign bodies into the bronchial tubes, the diseased lung structure is firm; there is no interlobular effusion nor hypertrophy; and the secondary change is most usually one of suppuration, leading to the formation of circumscribed abscesses, large or small, numerous or few, according to the size, character, and number of the irritating particles.

In some cases abscesses are replaced by encystment and liquefaction of the exudate, giving on transverse section a multilocular character; frequently, too, the foreign matter,—as small seeds, portions of grain, or other vegetable product,—will be easily detected in the bronchia, surrounded by an exudate, or in the centre of the cyst or abscess. Consolidation from this cause, also, is usually located in the anterior lobes, or at the inferior border of the large lobes.

In order to render my remarks on the *post-mortem* appearances intelligible, it will be necessary to consider them in definite order, under several heads.

a. The Carcase.—I will preface the remarks I have to make under this head, by observing that when called upon to examine the carcase of an animal suspected of having been the subject of Zy. p.p., the veterinary surgeon should pay particular atten-

tion to the condition of the *pleura costalis*, with the object of discovering whether any diseased or thickened membrane has been removed by the butcher for the purpose of deception. It must not be forgotten, however, that the pleura is often removed with the simple view of getting rid of the unsightly appearance produced by the adhesion of a film of congulated blood upon its surface, as the result of extravasation into the thorax from the knife having penetrated too deeply (" over-sticking "). In this case, all doubt is set at rest by the firm, healthy condition, and colour of the systemic muscles. It is also stripped in Tuberculosis and sthenic Pleurisy.

When stripping off the pleura has been resorted to, the smooth glistening appearance of the internal surface of the thoracic walls is replaced by a roughened, ragged condition, as the result of tearing through of the sub-pleural connective tissue and the costal periosteum. In many instances the butcher will attempt to remedy this by applying a little cosmetic in the shape of warm suet; but the use of this material can always be detected by the minute portions of inorganized fat adhering to the parts—these presenting a very different appearance to the small masses of fat which are naturally deposited under the pleura, and which are smooth and firm, with the glistering membrane outside. Some butchers use a solution of gum, white of egg, or the effused albuminous scum from the diseased lungs, to varnish over the stripped portions. But the torn fibres of the pleura, although plastered down, can be distinctly seen under the layer of varnish.

Elevation of the fleshy portion of the diaphragm (which is usually left on the carcase) on the suspected side, will frequently expose to view portions of diseased pleura which the butcher has not thought necessary to remove, under the impression that, being concealed, it will escape detection.

I am informed by Mr. Rutherford, Inspector of the Edinburgh *Abattoirs*, that the carcases of animals in an advanced stage of Zy. p. p., stiffen rapidly and very rigidly, more particularly if the animal has been much excited immediately before death; and, further, that the flesh requires a long time to cook by boiling, and is hard when roasted. These facts I have frequently

verified by experiment; and I have, in addition, noticed that a section of a roasted steak is parti-coloured, and that the fat does not inflame, or only very slightly so, when a light is applied to it, but sputters and chars.

In the early stages, *i.e.*, when the disease has existed two or three days, the muscles are not materially altered in character, except both lungs have been much involved, or the whole of one; in which case the exterior of the carcase will possess a peculiar mahogany tint, and the flesh will be dark in colour when cut across—sometimes even tarry; it will also present an iridescent hue, and be devoid of the firm feel of healthy beef. If the disease has been extensive, these characters will be very marked about the fourth or fifth day; and in all cases the changes are due to imperfect oxidation of the blood, and, consequently, accumulation within it of carbonaceous compounds. On exposure to the atmosphere (oxygen) for a short period, the dark colour gives way to a brighter red. When Hydrothorax has existed, the muscular portions of the diaphragm and the muscles of the ribs have a macerated or parboiled appearance; they are soft, thickened, and easily lacerated, and a transverse section presents a peculiar yellowish-brown tint, which in some cases is replaced by a bright-red (magenta) and glazed hue: the latter being most observable after exposure for a few minutes, and by comparing it with the corresponding parts on the healthy side of the chest. From the fifth to the sixth or seventh day, this glazed appearance extends more or less to the whole carcase—the fore-quarters especially—and is due to *albuminous effusion.* This condition may, on a cursory examination, escape detection, and is always most certainly discovered by stripping off a portion of the peritoneum or pleura. The muscle thus exposed has at first a moist appearance, and an adhesive feel; but the coagulation of the albumen soon gives rise to the *varnish-like albuminous glaze.* It must not be forgotten that the muscles of the neck, in all carcases which have been suspended by the hind-legs for a few hours, have an albuminous glaze, from the gravitation, exudation, and coagulation of the serum of the blood; but in these cases the muscles of the hind-quarters are healthy, and not glazed.

From the tenth to the fourteenth day the albuminous is replaced by *serous* effusion, the albumen becoming absorbed and used-up in the meantime; and the tissues have a white, watery, and macerated (dropsical) character. Both the conditions above described will be materially modified by the kind of food upon which the animal has been fed, and the healthy or unhealthy state of the system at the advent of the attack.

Considerable alteration (physically) will also be found in the muscular structures when an animal has recovered from the primary symptoms, and succumbed to the *sequelæ* of the affection. Usually the condition last described is present under these circumstances.

Albuminous effusion is only a concomitant, and not a special attribute of Zy. p. p. It is seen in other zymotic diseases,—as Rinderpest and Eczema Epizoötica,—and is due to the primary disturbance in the sanguiferous constituents by the action of the virus. The albuminous serum is re-absorbed, in order to compensate for the loss of the nitrogenized constituents of the blood, these having been expended in the support of the disease-producing germs; and the amount of this re-absorption will be regulated by the intensity of the tissue changes induced. The serous effusion results simply from lowered density of the vital fluid. If death ensues before serum is effused, the mahogany hue will again be present.

In estimating the dates at which these various changes in the muscular system, and also those in the lungs, take place, considerable difficulty is experienced, and accuracy is well-nigh impossible; owing to the fact that many animals may have been labouring under the disease several days prior to that on which its symptoms were noticed. And this difficulty is further exaggerated by the lack of truthfulness on the part of the owners of animals, who, for purposes of their own, will more frequently than otherwise falsify the date of the attack. The appearances described will be further altered or modified by the manner of death of the animal, and by the amount of blood drained from the system through the carotid artery; but it does not matter how much blood may have been removed, as the *mahogany hue* of the one stage, the *magenta hue* of the other, and the

macerated appearance of the last, are always more or less perfectly defined.

A very important question in connection with the use of Zy. p. p. flesh as an article of human food must not be overlooked; *i.e.*, in which of the three conditions is the flesh most likely to be deleterious? Before any marked physical change in the muscular tissue occurs, I can conceive no objection to the consumption of such flesh; but I have very grave doubts whether an inspector is justified in allowing it to be used when any one of the three conditions mentioned exist. I would not pass any flesh as food which gave evidence (by its dark hue) of the existence during life of a high degree of fever, or of imperfect decarbonization of the blood. And I would be even more decided with flesh of a magenta hue, and in which albuminous effusion existed; as in the stage when this change takes place the blood, and consequently the tissues and all effused materials, are charged with the virus of the disease. And although, when serous effusion takes place, the germs are dead and the flesh as a consequence innocuous, it is innutritious; its nutrient value being reversed in the two latter conditions. The opinion I have just expressed as to the noxious properties of the flesh when surcharged with albuminous serum, does not hold in the same kind of effusion resulting simply from injudicious admixture of food, —as in "turnip-braxy" in sheep. Here the condition is simply an effect, not of a vital or toxic, but of a physical cause.

I am fully aware that a vast difference in opinion exists amongst sanitarians as to what flesh should be utilized as human food; and this is in no case more strikingly exemplified than in the different ways in which the flesh of cows which have been affected with Parturient Apoplexy or Fever is dealt with in different localities. While in England I have seen scores of carcases of cows which have been slaughtered during parturition, or when suffering from Parturient Apoplexy, dressed and sold, even by first-class butchers, as meat; in this neighbourhood (Edinburgh) all fleshers, except those of the lowest grades, entertain a great dislike, almost amounting to horror, to such flesh, and will not purchase it at any price.

(*To be continued.*)

GLANDERS IN INDIA.

BY STAFF VETERINARY SURGEON J. COLLINS, DUBLIN.

In the *Veterinary Journal* for November (page 370) are some remarks by the Editor of the *Journal of the National Agricultural Society of Victoria*, Australia, on the subject of Glanders in India, which require some notice, as they are apt to mislead. He states, among other things, that "it (Glanders) is a very common disease in India." This is by no means the case; it is, in fact, a very rare disease in that country.

With regard to horses in, and exported from, Australia, the malady may possibly never have been developed in them; and this circumstance is worthy of notice by those who seek an insight into the predisposing causes of this formidable malady.

For some twelve years the writer had a good deal to do with Australian horses imported into Bombay, and he certainly cannot, at this moment, recall an instance of Glanders or Farcy having affected any one of them; at the same time he does not retain an impression that they were specially exempt. The statement in Mr. Fleming's "Manual of Veterinary Sanitary Science and Police," vol. i., p. 479—viz., that the disease is imported into India by Australian horses—needs, therefore, some modification. It would be more correct to say that the disease is introduced into India by imported horses.

With regard to the Presidency of Bombay, the writer met with the disease only in horses imported from the Persian Gulf or Africa. They have shown it on landing, or immediately afterwards; but they were very rare and isolated instances, and generally of Farcy. Anything like an extension of the disease to others, or an outbreak *de novo*, he never met with.

On the return of the Expeditionary Force from Abyssinia, Glanders prevailed to a great extent among the mob of mules collected near Poona. The diseased animals were, of course, destroyed, and the remainder were scatted over the land in the numerous commissariat yards in India. Yet Glanders did not extend from this source.

Glanders also prevailed to a small extent in an irregular

cavalry regiment, on its return from the same country; but by destroying some three or four, the disease was at once stamped out.

The worst instance that came under the writer's notice was in a cargo of horses shipped at Natal (South Africa) for Bombay. About eighty-eight horses were embarked in a vessel under five hundred tons burthen. Owing to stormy weather, the hatches had to be put on for a short time. On arrival in Bombay only twenty-six horses were alive. Some of these were shot at once for Acute Glanders and Farcy.

But to show how inimical the climate of India is to this disease, the writer kept two of these cases for experiment, as they were in tolerable condition. One of them had open Farcy ulcers on one hind-leg, a discharge from the near nostril, two ulcers on the Schneiderian membrane, and the submaxillary gland enlarged. The other had open Farcy ulcers on one hind-leg only. They were treated with increasing doses of arsenic, and were allowed good food and exercise. In two months they were perfectly well, and were drafted to the Artillery; where they may be now, for they remained quite healthy during the last three years of the writer's service in Bombay.

There is not the slightest doubt that if these cases had been met with in England they would have been destroyed; for they were glandered and farcied, in the usual acceptation of the term; and it is not difficult to understand that even "tubercles" in the lungs, if present, may have been arrested in their growth, or otherwise rendered innocuous.

It is not at all unusual for veterinary surgeons serving in India to take in hand horses that have recently landed, showing symptoms of Farcy, and to treat them with successful results.

Again, the writer has more than once endeavoured to produce Glanders by picketing a sound animal with one decidedly glandered, and allowing them to feed together for weeks, without producing the disease; but he has produced it at once by inoculation.

In Europe, and in temperate climates generally, Glanders is the scourge of armies in the field; it is never absent for long: yet one never heard of Glanders decimating the numerous horses

and mules of an Indian army, in any of its many campaigns—provided, of course, that they were never on board ship.

All this shows that the climate is unfavourable to the development and destructive progress of the disease.

There is also another matter which is worthy of notice, and which may possibly throw a side-light on the true nature of Glanders. Diseases of the lungs are seldom or never met with in India. Pneumonia, Pleurisy, Emphysema, etc., etc., are comparatively unknown. The practitioner, in examining as to soundness, never looks for "broken wind" or "roaring"; simply because they are, for all practical purposes, unknown in India. At the same time, Catarrhs, bronchial affections, Strangles, sore throat, and coughs, are by no means uncommon.

It is also found that Tuberculosis, as well as pneumonic affections in general, are comparatively rare amongst human beings residing in India; but the natives, like the monkeys, are soon attacked when brought to this country.

What pathological analogy there is between Phthisis in the human being and Glanders in the horse has yet to be investigated; but there appears to be no doubt that a deposit of caseous tubercular matter in the lungs is common to both, as well as having many other points of resemblance.

The history of many outbreaks of Glanders, with its slow and insidious extension, points to the conclusion that Tuberculosis may exist unsuspected for an indefinite period, and be capable of transmission by infection or contagion to others, leading to the production of tubercle, and Glanders be finally developed either by the gradual progress of the disease, or exposure to some transient exciting cause.

Mr. Fleming, in his recent work ("Veterinary Sanitary Science and Police"), arrives at the conclusion that the contagium is "fixed."* This is open to very grave doubts; and it will be seen

* [We certainly did not intend this to be inferred from what we said. We have stated in that work as follows: "The two forms of this disease being transmissible, owing to the presence of a contagium which indifferently produces both, we have now to inquire into the character of this virulent element, the existence of which was for a long time denied. This contagium is *usually* present in the 'fixed' form,—evidence as to its volatility not yet being sufficiently strong to warrant the assertion that it is *always so*, notwithstanding the weight of certain recorded cases of transmission. It is certain that the con-

at page 522, Vol. I., that it is opposed to the experience of some French writers whom he quotes.

In temperate climates, we know that with an army in the field Glanders is generated by certain conditions, which are as follows: (*a*) Hard work; (*b*) Deficient forage; (*c*) Wet and exposure; (*d*) A low temperature. The first three factors may exist, and have frequently existed in Indian campaigns without Glanders appearing; so that we are driven to the last factor, viz., a low temperature, as the great predisposing cause with an army on active service.

That Australia is so far free from Glanders, is probably owing to the two chief preventive agents being in operation in that country—viz., an elevated temperature, and what follows as a necessary attendant—free ventilation. But he must be a bold man who would assert that if Australian horses were battened down on board ship, Glanders would never appear. That they have hitherto escaped on the passage to India must be attributed to good accommodation and management on board.

THE DIAGNOSIS OF GASTRO-INTESTINAL AFFECTIONS.

BY ALFRED BROAD, M.R.C.V.S., PADDINGTON.

THE subject of the following case was a bay gelding, six years old, belonging to a surgeon in this neighbourhood. On the evening of the 16th November last, a feed was given him consisting of boiled oats and linseed only, which was hastily devoured. At 9 p.m. he commenced pawing, looking round, and showing

tagium is not volatile in Chronic Glanders and Farcy; and even in those instances which have been adduced to prove its volatility, we find that transmission occurred in close, hot, and confined stables where there were one or more diseased animals, and was most probably due, if not to direct contact, to the contagious matter (the viruliferous particles) being carried by the air, as it is known that pus may be so transported."—Pp. 528, 529. In the paper which appears in this number of the *Journal*, we have also stated that the contagium may at times be "volatile." We thank Mr. Collins, nevertheless, for allowing us the opportunity of re-stating and, if such were necessary, correcting any erroneous impression made by our opinion.—ED. *V. J.*]

the usual signs of abdominal pain. The owner was then informed of the state of affairs, but did not attend till past ten o'clock, the horse in the meantime having become rapidly worse. From witnessing the animal's ineffectual efforts to micturate, and no doubt being confirmed in his opinion by the customary sage remarks of the stablemen, the doctor ascribed the symptoms to spasm of the urethra, and administered two drachms of Tinct. Opii with the same quantity of Spts. Æther. I was first called to the case a little before midnight, and found the horse in great agony, and bedewed with a clammy perspiration. The endeavours of those around him had been directed to keeping him on his legs; but when held, he would push violently into the corner of the box all who opposed him; and from the intense pain he was suffering, it was impossible to keep him sufficiently quiet to count the pulse, though it was evidently very quick. A draught was administered containing Tinct. Aconite Flem. 15 m. and Æther Sulph. ℥i.; but no effect was produced, except the frothing at the mouth, and spasmodic action of the throat which Aconite causes. Mustard was freely applied to the abdomen. A small quantity of fæces was voided; this had occurred twice before I saw the horse. At 12.30 the following mixture was given:—

Tinct. Opii	℥i.
Arom. Spts. Ammon.	℥i.
Æther Sulph.	℥iv.
Aloes Sol.	℥vi.
Ol. Lini.	Oss.

Tympanitis was now apparent, and a little flatus was occasionsionally expelled; but no abatement of the symptoms took place. At 1.30 the following was administered:—

Spts. Æther Comp.	℥i.
Arom. Spts. Ammon.	℥i.
Tinct. Opii.	℥vj.
Ol. Lini.	Oss.

This was repeated in an hour; but during this time, and subsequently, the animal continued to give expression to his pain in the most violent manner, and without intermission, save during the temporary periods of quietness while lying on his back, or

while looking round at his flanks. This he would do for some moments together. The conjunctivæ became intensely congested, and the perspiration alternately cold and hot. The feature in this case, and one which is not of ordinary occurrence, was that latterly, during the intervals between lying on his back, rolling, kicking, and plunging, he would raise himself on his haunches, extending his fore-legs till they slipped away from him; this sitting attitude he continually repeated. At 3.30

Tinct. Opii. . . . . ℥iss.
Arom. Spts. Ammon. . . ℥iss.

were given; and at about 4 o'clock I left him, as there was no amelioration of the symptoms, and a continuance of the sitting posture. I gave an unfavourable prognosis, believing that rupture would take place. I was subsequently informed that the horse continued in the same state till about 6 o'clock, when, after a succession of most violent plunges, he rose and stood in the middle of the box with his head depressed. He continued in this position till I returned, at 8 a.m. (17th); all acute pain had now left him, but he presented a very dejected appearance: his eyelids were so swollen and tense from repeated bruises that he could not separate them; the pulse was 72; gas was passed freely *per anum*. From this time he made a rapid recovery.

The cause of this attack was evidently the hasty swallowing of the oats in an unmasticated state, which produced indigestion; this giving rise to tympanitis of the stomach and intestines, with probably a spasmodic condition of a portion of the latter. Recovery I imagine to be due to the ultimate relaxation of the spasm, permitting the imprisoned gases to escape, which they did in great volume as improvement took place.

There may not be much of unusual occurrence in this case; horses frequently suffer as acutely under like circumstances. But as the subject of abdominal affections has been brought before the readers of the *Veterinary Journal* very frequently of late (again, also, since I penned the above), I thought it might assist in illustrating the subject of Diagnosis, more particularly with regard to the symptom of sitting on the haunches, which on this occasion was so persistent, and was followed by recovery.

This peculiar attitude, when assumed by the horse in pain, is usually considered a very grave symptom, and has been stated by some veterinary writers to be itself indicative of ruptured stomach. This is evidently incorrect; but sitting on the haunches has its diagnostic value: it indicates the seat and nature of the pain evinced—that is, over-distension of the stomach and anterior portion of colon, or both; the horse taking this position to relieve the diaphragm from their weight and pressure. Rupture, however, cannot be diagnosed until its more characteristic and fatal signs are seen,—notably, the deathly coldness, failing or "running down" pulse, and haggard expression of countenance.

Ruptured Stomach.

I have before me notes of a case which I attended a year or two ago, in which tympanitis, resulting from indigestion after feeding on "cinquefoil," was followed by gastric rupture. The symptoms, as is often found in cases of this kind, were not of a very violent description. Their course was as follows: pawing and restlessness, followed by a long period of comparative ease; looseness of bowels, and expulsion of gas; recurrence of pain, with obstinate continuance in the recumbent position; temperature variable. The mare was with difficulty made to rise; she perspired freely; the pulse was 80 and weak; the nostrils dilated; an anxious expression of countenance; eructations of gas; increasing tympany till the abdominal walls were as hard and tense as a drum, with no further escape of flatus; coldness of extremities; and, lastly, frequent sitting upon the haunches. I did not witness any later symptoms, as the mare died an hour after I left; but I was informed that the draught given half an hour previous to death, and which contained stimulants, greatly increased her agony: a symptom which Professor Walley, in the *Veterinary Journal* for December, mentions as decisive of rupture having occurred. The duration of the attack extended over seven hours.

Necropsy. The intestines were enormously distended, and when moved aside, the presence of ingesta within the omentum revealed the nature of the lesion. The stomach was then care-

fully removed, and on the larger curvature a rent about eight inches in length was discovered. This extended through the muscular and peritoneal coats; and through it was visible a further rupture of the villous half of the mucous coat, about two inches long.

One question which has arisen in connection with this subject, is whether *post-mortem* rupture can be distinguished from the *ante-mortem* lesion. It appears probable that death may sometimes result from asphyxia and exhaustion produced by the tympany, and that the coats of the stomach may afterwards give way under the pressure of the gas. This effect would be produced in the same manner both before and after death, and it is difficult to imagine any distinctive appearances in either case; but I think that the symptoms preceding death would greatly help to determine the question. At the same time, I suspect that *post-mortem* rupture is of rare occurrence, as the coldness that ensues immediately after death would arrest any further evolution of gas.

The cause of rupture of the stomach or intestines is, without doubt, over-distension; though a sudden fall is frequently the exciting or immediate cause. This was instanced under my observation a few weeks ago, as follows:—An aged horse in a very weak condition, fell while at work in a cart, and was with great difficulty made to rise. He again fell on reaching a stable close by, and died almost immediately. The coats of the stomach were attenuated, and ruptured in exactly the same place and manner as in the case above described.

VETERINARY PRACTICE IN THE SOUTHERN STATES OF AMERICA.

BY B. M'INNES, V.S., CHARLESTON, SOUTH CAROLINA.

(*Communicated by Professor Williams, New Veterinary College, Edinburgh.*)

TRAUMATIC TETANUS AND TRISMUS.

ON Tuesday morning, May 25th, a grey mare, eight years old, was brought into the infirmary, showing symptoms of Tetanus.

History.

On Friday, May 14th, the mare was brought to the shoeing shop, lame in the off hind-leg. Upon examination, a nail was found to have punctured the foot in the right lateral lacuna, near the heel. This must have been in for some days, as pus had made its way out at the fetlock joint. The hoof was well pared, and the animal sent home to have the foot poulticed. On Tuesday, the 18th, the lameness had disappeared, no pus escaped from the wound, and no pain was evinced on pressure. A shoe was now put on to protect the foot, and instructions were given not to use the mare until she was brought back to the forge for examination; but the proprietors being anxious to work her, drove her out on Friday, 21st. On Saturday, 22nd, she was exposed to a very heavy shower of rain, besides being driven very fast. On Tuesday morning, 25th, the owner's wife, wishing to go to the ferry boat, ordered the groom—an old negro—to harness the mare, when he said he noticed something peculiar about her eyes; however, he drove her to the boat in a very heavy coupé. On his return home he saw plainly by her movements and strange appearance of the eyes that she had Tetanus —"hooks," as he styled it—as the negroes here believe it to be a disease of the *membrana nictitans*, and this man told me he had seen them cut out many a time.

(I hope you will excuse this little parenthesis, but it is really so funny that I cannot refrain from relating it. A few weeks after my arrival here, I was asked by a gentleman to go into the country to see a horse that belonged to one of his customers. I started in the morning about five o'clock, and arrived there about nine. The horse was brought out, when I immediately diagnosed from the symptoms Disease of the Spine. I asked the owner what he had done for the horse, and he related as follows: After the animal had been weak in his back a few weeks, a man came along who told the owner to have the "leaders" of the nose cut, which he had done—no cure. Another said he must have the "leaders" of the ears cut, which was done —no cure. The best was the last operation, which took place in this way: a very learned old negro came, and having looked at the animal with a professional eye, he pronounced it to have

"de hooks," which he said must be cut out, as they were very often the cause of stiffness in "de loins." So the *membrana nictitans* of each eye was cut out, and the poor animal has been left weeping over his sad fate ever since. I have now in my possession a little book published here, in which all the symptoms of Tetanus are described as being due to disease of the *membrana nictitans*, called "hooks." Last week I heard that some old fellow presented himself, who said he could cure the horse; so the owner gave him away. The "curer" carried him out of sight, and sold him for fifty dollars. If this poor beast was followed up, one might write a biography of him. This will show you the kind of people we have in our backwoods.)

Treatment and Progress of Case.

May 23rd.—I perceived that the mare was affected with Traumatic Tetanus affecting the voluntary muscles; those of the neck and jaw being particularly tense. I administered a cathartic of Cape aloes 3viii. in bolus, and gave the groom a solution of Ex. Belladonna * (1 to 8 of pure water), with instructions to give a tablespoonful in the food and water. The stable was of brick, with three stalls divided by very weak wooden partitions; she was placed in the middle stall. I gave strict orders to keep the stable as quiet as possible, also the yard; this was done, as the animal was a valuable one.

May 26th.—Mare quiet and still eating; the respirations accelerated.

May 27th, 28th, and 29th.—Mare tranquil, and eating; respiration very much accelerated.

May 30th.—Mare quiet; respiration very quick. Affected with Trismus; but still able to suck a little gruel made of oatmeal, milk and eggs. The groom told me that he had been up all night with her, and that she ate up to two o'clock in the morning.

She was in the same condition until the 2nd of June, when she commenced to champ her jaws, showing that Trismus was gradually abating. I offered her some bran and oats; but with

* I think the Solution better than the Tincture for animals—as they do not like alcohol.

difficulty she ate about a handful. During this stage I injected, per rectum, two quarts of gruel every four hours, and chloral hydrate ʒiv., with water one pint, every six hours.

June 3rd, 4th, and 5th.—She ate very little food—such as bran and oats and a few carrots; her principal diet being the oat-meal gruel, of which she drank pretty liberally.

June 6th.—Appetite improving; ate about a quart of mixed food, some hay and gruel.

June 7th.—Appetite improving, but her respirations were very much accelerated, and her nostrils dilated, with much contraction of the superior part of their alæ. She was extremely weak. The temperature was 103°. I now thought it was time to sling her, but deemed it expedient to wait until evening, as I could then procure proper assistance. When I called in the evening, about six o'clock, I found her down. The groom having gone out, the waiting man was knocking down one of the partitions in order to keep her from injuring herself, as she had fallen with her shoulders close to the manger on her right side, with her neck flexed upwards, which kept her in such a position that she could not assist herself. You can imagine the effect of such a noise. I caused the man to desist, and pulled the mare out into the middle of the stable. She was very much excited; pulse strong and rapid, as also were the respirations. I knew that she could not live long in this condition; so after giving her chloral hydrate ʒvi. in solution, I started for home, a distance of a mile, procured my slings, and with proper assistance, and after a good deal of trouble, placed her in them, and made her as comfortable as possible under the circumstances. The chloral hydrate had had a good effect; but in order to calm her as much as possible, I injected again, per rectum, chloral hydrate ʒvi.; after which she became very quiet, stood the slings splendidly, and commenced to pick a little food. I told the groom to watch her during the night, and he reported next morning that she behaved very well. This was done for three nights, when she became quite used to the slings. I continued the chloral hydrate treatment (ʒiv. in solution every six hours) until June 17th, when her strength and appetite having so much increased, and no excitability being perceptible, all medicinal treatment was discontinued. I relieved

her of the slings every afternoon, and gave her a little exercise, increasing the time each day, from ten minutes the first afternoon to as long as an hour later on.

On the 9th of July, finding her strength so much increased, and her respirations almost normal, I relieved her of the slings altogether; but she did not risk to lie down for one week after this.

Remarks.

I must add that I attribute a great part of my success in this case to the extreme quietude that was maintained during the disease. I did not poultice the wound, but smeared Extract of Belladonna on it. During the attack the thermometer ranged from 90 to 100 degrees in the shade. The mare was in the slings thirty-three days, and even during all this excessively hot weather she chafed herself very little.

I send along with this a summary of my practice in Tetanus since I commenced professional duties, in October, 1874, which I think will prove interesting. With your kind indulgence I will make a few remarks upon the same; otherwise the paper would seem imperfect.

Case No. 1.—A black horse received a puncture by a nail in the fore-foot; this receiving no attention produced Tetanus. The animal died.

Case No. 2.—A black horse received a puncture by a nail in the off hind-foot; the foot received good attention, but the animal was worked too soon, and died of Tetanus.

Case No. 3.—A young mule received a puncture by a nail; this produced Tetanus and death. The animal being inconveniently distant in the country, I did not see her but once; had she received good care, I think she would have recovered.

Case No. 4.—An aged grey horse, blind in both eyes, received a puncture by a nail. This was treated; but the horse was put to work too soon, and died from Trismus. I think his being blind kept him in an abnormally excited condition while at my infirmary, the place being strange to him.

Case No. 5.—A mule with Tetanus, caused probably by a strain. This mule was worked in a dray, and hauled four bales of cotton at a time, or about 2,000 lbs. She was recovering very well from the

injury up to about the twelfth day, when I ventured to rest her in the slings; this brought on excitement, which resulted in Trismus and death.

CASE NO. 6.—A young grey mare received a puncture by a nail in the near fore-foot. Little attention was paid to the foot. Tetanus occurred on the third day after the puncture, and death on the fifth.

CASE NO. 7.—A mule with Tetanus, caused probably by a strain. This mule worked in a wood-cart, and had a good many high side-walks to pull over, in order to enter yards to deliver wood.

CASE NO. 8.—A large mule which received a puncture by a nail in the off fore-foot. The wound healed; but the animal, I was told, died suddenly from Tetanus on the fortieth day after I first saw her. This I cannot believe, as it occurred at least fifteen days after I pronounced the mule quite convalescent. The owner was away from home; when he returned, he found the mule dead. I think she must have died from Colic.

CASE NO. 9.—Bay pony, aged: received a puncture by a nail in the near hind-foot, which was discovered after Tetanus had set in. Recovered.

CASE NO. 10.—A black mare, three years old; received an injury by shying with her rider, and coming in contact with the shaft of a buggy which was in motion. The shaft penetrated the shoulder, about three or four inches above the scapulo-humeral articulation, to the depth of about six inches. Notwithstanding every precaution, Tetanus appeared eleven days after the accident.

CASE NO. 11.—This, a mule, furnished a curious case. There appeared to be a period of incubation; for the owner, who was a poor man, and could not afford to lose the animal, came to me about ten days before positive symptoms of Tetanus were palpable, and stated that some one had told him his mule had spasms (a common term). I examined the animal, and noticed a peculiar appearance of her ears, but could not detect any stiffness in her gait. The owner came again in ten days after this, with the animal, which manifested symptoms of Tetanus. She worked in a dray, and got the best of care; the puncture was attended to, and healed, and the shoe was replaced. The time occupied in effecting a cure was about three weeks.

CASE NO. 12.—A mule received a puncture by a nail in the off hind-foot. Recovered.

CASE NO. 13.—A mule received a puncture by a nail in the fore-foot: the wound was attended to, but the animal was worked too soon. Recovered.

CASE No. 14.—A grey mare, of which you have heard a great deal, but I hope not too much, as it was a very instructive case.

CASE No. 15.—A mule: cause not known; probably due to a strain, as this animal worked in a street or tramway-car, and had a good deal of drawing to perform. Recovered.

CASE No. 16.—A mule: cause not known; probably produced by a strain. This animal worked in a dray, and was hauling heavy loads of resin when attacked. Recovered.

CASE No. 17.—A grey horse: received a puncture by a nail; wound got some attention, but the animal was worked too soon. Died from Tetanus on the third day.

CASE No. 18.—A grey horse received a small wound from a splinter over the eye; which the man thought was "nothing," as he expressed himself. Upon examination I found a small piece of wood about half an inch long in the wound, which was inclined to heal; they had it covered with soot. On the second day Trismus set in, though the horse was doing well until the fourth day, but during the night he fell down and became so much excited that by nine o'clock next day, when I arrived with slings, I saw it was useless attempting to lift him. Consequently we gave him a dose of hydrocyanic acid, which I thought was the most humane treatment.

CASE No. 19.—A sorrel stallion. I could trace no cause, unless it was going without shoes over our "cobbled" streets. Recovered.

CASE No. 20.—A mule. Tetanus caused by a large saddle-sore on the back; the animal was very old. Died.

CASE No. 21.—A bay horse; received a puncture by a nail in the near hind-foot. Fair attention was paid to the foot. Tetanus set in four weeks after he received the puncture. This horse was known to have had three epileptic seizures. He has not had any since his recovery.

CASE No. 22.—A mule: received puncture by a nail. Recovered.

CASE No. 23.—A mule: received puncture by a nail. Trismus set in on the third day. Died in the night of the same.

CASE No. 24.—A filly, seven months old. Disease may have been caused by exposure. I might possibly have saved the little animal, but when I arrived an old negro had been there, and had her rubbed with turpentine, which excited her so much that she could not stand on her feet. She died the next morning at four o'clock.

CASE No. 25.—A mule, progressing very favourably, and now convalescent. Tetanus occurred from a large saddle-sore on the back.

Remarks on Cases in toto.—You will notice that out of 25 cases 18 were traumatic, 7 were idiopathic; 12 were horses, 13 were mules; 12 recovered—four horses and eight mules.

The treatment was Tinct. Belladonna, and in one or two cases Hydrate of Choral. In case No. 21 no internal treatment was resorted to, but strict attention was paid to enforcing quietude in the stable, and keeping him shut up in a box stall. Case No. 25 is receiving the same kind of treatment.

You will no doubt think it strange why there is so much "puncture by a nail" in this paper; but you must recollect that we are in a great wood country, where the houses are all wood, and the shingles are wood; consequently they must use a great number of nails in the erection of buildings here. These nails are dropped in the streets during carriage through the city.

No.	Date of Entry.	Traumatic.	Idiopathic.	Horse.	Mule.	Termination.	Causes.
	1874.						
1	Oct. 9th.	1	0	1	0	Died on 4th day.	Puncture by nail.
2	Nov. 6th.	1	0	1	0	,, ,, ,,	,, ,,
3	Nov. 28th.	1	0	0	1	,, 10th ,,	,, ,,
4	Dec. 9th.	1	0	1	0	,, 6th ,,	,, ,,
5	Dec. 11th.	0	1	0	1	,, 14th ,,	Probably from strain.
	1875.						
6	Jan. 26th.	1	0	1	0	,, 3rd ,,	Puncture by nail.
7	,, ,,	0	1	0	1	,, 7th ,,	Probably from strain.
8	,, 29th.	1	0	0	1	Recovered.	Puncture by nail.
9	Feb. 9th.	1	0	1	0	Recovered.	,, ,,
10	April 13th.	1	0	1	0	Died on 6th day.	Wound in brachial region.
11	May 20th.	0	1	0	1	Recovered.	Probably from strain.
12	,, 23rd.	1	0	0	1	Recovered.	Puncture by nail.
13	,, 24th.	1	0	0	1	Recovered.	,, ,,
14	,, 25th.	1	0	1	0	Recovered.	,, ,,
15	,, 30th.	0	1	0	1	Recovered.	Probably from strain.
16	July 6th.	0	1	0	1	Recovered.	,, ,,
17	,, 9th.	1	0	1	0	Died on 3rd day.	Puncture by nail.
18	Aug. 6th.	1	0	1	0	,, 5th ,,	Wound over eye.
19	,, 7th.	0	1	1	0	Recovered.	Probably from sore feet.
20	,, 8th.	1	0	0	1	Died on 3rd day.	Puncture by nail.
21	,, 9th.	1	0	1	0	Recovered.	,, ,,
22	Oct. 6th.	1	0	0	1	Recovered.	,, ,,
23	,, 30th.	1	0	0	1	Died on 2nd day.	,, ,,
24	Nov. 7th.	0	1	1	0	,, ,, ,,	Probably from exposure.
25	,, 27th.	1	0	0	1	Recovering.	From large sore on back.
	Totals	18	7	12	13		

FRACTURE OF THE LUMBAR VERTEBRÆ.

BY J. BARKER, M.R.C.V.S., BATH.

I SEND for insertion in the pages of the *Veterinary Journal* particulars of a case of Fracture of the Lumbar Vertebræ, one portion of which I forward for your inspection, when no doubt you will be able to give your opinion on the case, which is luckily one that seldom occurs in the practice of veterinary surgery. On November 1st I was requested to see a three-year-old filly (by "Knight of Kars,"—dam a celebrated local huntress, well known as a wonderfully clever jumper), which was "at keep" in the country for severe lameness. I found her resting on the fetlock of the off behind, in which attitude I was informed she had stood for two days, scarcely shifting her position. It was with great difficulty I was able to apply temporary splints, bandages, etc. I visited her again next day, and finding her better, got her out of the stable—which was rather dark—and determined to get her to my own stables. She performed the journey well, and I found on her arrival that the cause of lameness was merely a bruised frog, which was in a state of suppuration. From this she soon recovered, and was put into light exercise, carrying six stone until the end of the month, when her owner wished to have her hocks "fired," as they were rather "curby." She was accordingly prepared, and "cast" as usual on a very deep straw bed, in the presence of the owner. She came down very easy, and made the usual struggle; but bore the operation well, only struggling occasionally and slightly. On being liberated, she was unable to rise at first; but by changing her position, she did so with great difficulty, and was walked a very short distance, and returned to her box.

Next morning strengthened the suspicions I had begun to entertain with regard to her condition, as she seemed to have lost all power of the hind-quarters, particularly the off one. She was watched till noon, when she got down. Being in a very comfortable position, she was allowed to lie till my farriers returned from dinner; when she got up with assistance, but was unable to walk half a dozen yards to the place where the slings are attached,

and again got down, after which she never made another effort. She was raised by means of a running chain pulley-block, and secured for the night in the slings, scarcely ever bearing any weight on her feet. Next morning I advised the owner to take Mr. Broad's opinion; and on that gentleman seeing her, we agreed to make use of his slings, which I must say are superior to any I know of. But in this case they were insufficient, without the aid of a very strong leather surcingle round the flanks, and attached to a point behind over her tail. She then found her legs a little, drank, and ate hay, etc.; but next morning the entire weight of her quarters was suspended by the roller alone. On Mr. Broad seeing her again, it was decided to release her and have her destroyed. This was done, and the *post-mortem* examination revealed a fracture of the third lumbar vertebra, as shown in the part I have sent for your inspection, which has been freed from the spinous processes for convenience of postage. Prior to the autopsy, I was informed by different people that when a yearling she had been blistered on her loins; and she certainly bore a scar destitute of hair, and the size of the palm of the hand. This was stated by her owner to be the result of a wound received at pasture from a glass bottle. He positively denied the blistering, etc. He is a sporting chemist, and usually employs a farrier; but in this case there is no litigation impending, and he admits that the animal suffered from what he calls a "chill," contracted when a "weanling" away from home, and through being turned out on a wet night on her way to Badminton Show. I also examined the posterior dorsal vertebræ, and found them also presenting a blackened appearance, but in a slighter degree; and on showing them to two experienced butchers, they were at once pronounced to be diseased bones.

In this case, I may say I never saw an animal "cast" under more favourable circumstances; and it is the first accident I have to record from "casting" in the course of twenty-four years' experience. In the summer of 1874, I "cast" a thorough-bred stallion, twenty-five years of age, in order to operate on his molar teeth. This animal, when released, jumped up like a stag from the bed; he was my own, and I incurred the risk. It is not often veterinary surgeons make public an untoward event that may

happen in their practice; but I send it for publication, hoping it may be a useful lesson to the younger members of our profession. I informed the owner that I looked upon the accident as happening for the best; as it was his intention to keep her twelve months longer before putting her to work. This expense alone would have been more than the mare was worth in the state she was in.

[The lumbar vertebra forwarded for inspection had been boiled, and this has rather spoiled it for examination. The body is fractured, and the texture looks spongy. Ossification of the intervertebral discs has taken place, with partial, if not altogether complete, anchylosis of the bodies of the adjoining vertebræ. The specimen looks as if obtained from an old animal, and there can be no doubt that the pathological alterations have been due to injury of the lumbar region at some period antecedent to the operation performed by Mr. Barker, and which led to the accident; though he must be held, of course, entirely blameless for this result. Veterinary surgeons would do well to guard themselves against the consequences of such accidents, by intimating to the owners of animals which are about to be "cast" the risk of this procedure. The accident is most likely to happen with aged horses, or those which have undergone severe exertion—particularly in draught—when immature; but anchylosis—partial or complete—of the lumbar vertebræ in young animals may ensue from injury, as by being "cast" in the stall; and the danger of throwing down a young horse for operation may therefore be as great as if it was an old animal. We have some cases in our note-book which bear on this subject, and these we shall publish as opportunity offers.

In a subsequent letter, Mr. Barker mentions that this animal had been observed always to turn stiffly and awkwardly, but this was attributed to "rawness,"—having been only partially broken-in.]

THE DIAGNOSIS OF GLANDERS.*

BY GEORGE FLEMING, M.R.C.V.S., ROYAL ENGINEERS.

If our knowledge of pathology, and what we may designate "animal exterior," were to be tested by the instances which we almost daily find recorded in the annals of Veterinary Jurisprudence, I fear we could not lay claim to any very exact notions as to what constitutes good or defective conformation, soundness or unsoundness, what differentiates one disease from another, or where health ends and disease begins. Subjects upon which members of the veterinary profession should now be competent to express a unanimous and decided verdict are, we only too often find, fertile sources of diversity of opinion; while others are rendered so obscure by conflicting evidence, that it is difficult to make out whether anything at all is known with regard to them.

All this diversity of opinion, and the absence of any fixed notions with respect to important matters connected with veterinary science in medico-legal questions, often brings our calling into disrepute, and deprives us of that confidence which the public would otherwise have in our knowledge. It also exposes us to severe comments from the judges and administrators of the law, and to unfavourable criticisms in the press.

For not unfrequently those who are unacquainted with the difficulties which beset us in our endeavours to arrive at a sound opinion, are ready to attribute it to lack of knowledge—which it may be; to stupidity—which it might chance to be; or to interested motives—which we earnestly trust it never is nor ever will be: except, of course, in the interest of truth and the reputation of our profession.

Often we are most unjustly blamed when we oppose each other in the witness-box: when a number of scientific experts will solemnly assert that a certain malady or defect exists in an animal, and an equal number will as fervently declare that it is not to be found. For there are, in some cases, difficulties which are not easy to overcome in deciding as to the actual presence

* Read before the Midland Counties Veterinary Medical Association, January 11th, 1876.

or absence of particular conditions,—difficulties due to our imperfect notions of what really constitutes some morbid states, or to our inability to discover what others may readily detect, or imagine they can detect.

Human knowledge and human nature are far from being perfect, and the branch of science which we have selected for our life-study is not yet advanced beyond some other sciences, whose devotees, though better situated in many respects for the elucidation of moot points, yet frequently come off no better than ourselves in a court of justice.

Even our legal brethren, who so severely cross-examine us and gibe at us for our divided opinions, make but a sorry figure at times in their own particular province; indeed, we fancy that no branch of learning is more open to attack for its conflicting opinions and widely-divided judgments than that of the law. And though its practitioners may find themselves impelled to display their forensic wit and raillery at the expense of the practitioners of medicine—human or veterinary—and to please their clients, yet it is to these "doctors' differences" that lawyers are indebted for much of their business.

These preliminary remarks have been called forth by the knowledge of several cases which have occurred recently, and which, related as they are to a contagious disease—Glanders—seem to me of more than usual importance, both in a sanitary, pathological, and legal point of view. For, however unsatisfactory it may be to entertain some amount of uncertainty, or to enter into a disputation as to the existence or nature of a non-transmissible malady, any conflict of opinion as to whether a disease is or is not communicable, becomes, from at least one point of view, rather serious; and this, from the simple fact that, if it is decided to be not contagious, while it is all the time virulent, far greater danger and loss are incurred than if it was non-virulent, or declared to be virulent and the necessary precautions adopted.

To allow an animal affected with a transmissible disease to wander about among healthy animals, tainting them everywhere it goes, and perhaps infecting, directly or indirectly, a district, a county, or an entire country, even though this permissibility

may be due to an error of judgment on the part of the experts, is yet a responsibility too grave to be viewed in any other than a serious light. Whereas a mistake in the opposite direction—declaring to be contagious a non-virulent malady—though to be carefully avoided if possible, is comparatively a mere trifle, and scarcely to be considered.

The diagnosis of a contagious disease is, therefore, a most important matter from a sanitary or preventive point of view. Think but for a moment of the serious consequences which would result from an error in diagnosing the first case of Cattle-plague, Foot-and-mouth disease, bovine Lung-plague, Sheep-pox, or Scabies, in a pastoral country yet free from these scourges! Think even of the lamentable results to our own species which might follow a mistake in diagnosing a case of canine Rabies!

And yet this question of distinguishing accurately a "catching" sickness involves a knowledge of everything pertaining to the symptomatology of disease: its nature, its mode of extension, its various modes of manifestation, and, perhaps, most of all, its anatomical characteristics. Unless we know thoroughly everything relating to the *natural history*, if we may employ the term, of a disease, we shall always be more or less liable to err at times; and in direct proportion as this knowledge is perfected, so the more readily and certainly will it be distinguished from those which might simulate it, or for which it might be mistaken.

An error in diagnosing Glanders, though perhaps not so serious as it would be in the case of such a disease as Cattle-plague, must be considered, nevertheless, a great misfortune. Indeed, so far as horse and human life are concerned, it would be far less culpable if a score of horses were destroyed as suspected of being affected with the disease, and were found on *post-mortem* scrutiny to be free from it, than it would be if we allowed one to pass as exempt, but which was really glanderous.

Seeing, then, the importance of the question from a professional and public, or sanitary point of view, a discussion as to what we are to rely upon to establish a diagnosis, and how we should act when in the presence of a suspected case of Glanders,

is one eminently worthy of attention, and can be much more beneficially and scientifically entered upon at a meeting of your Society, which numbers so many excellent practitioners, than it could be in a court of law. Here our reputation is not at stake, and the public interests are not endangered by a wrong opinion; here we can compare notes and argue from our own particular platform; and in doing this we not only individually add to the sum-total of the knowledge so necessary for progress, but in increasing our mutual respect for each other's opinion, we may in the future spare ourselves the unpleasant and undignified penance of opposing each other in the witness-box, degrading our science, doing an injustice to our clients, amusing or irritating the public, and benefiting only the lawyers.

I have often thought that it would be a great gain to the public and to ourselves, could we, at these Societies' meetings, discuss the scientific bearings of such questions as are at present argued before judge and jury, often in a manner more astounding than exact.

As I have said, in order to diagnose Glanders we must be familiar with its natural history: its symptoms, different phases, the pathological alterations which characterise it, and other features. We must also be well acquainted with those diseased conditions which simulate it, and for which it is sometimes mistaken.

It would be rather out of place, and indeed we have not the time to spare, to enter upon a consideration of the pathogenesis of the malady. It, as you are well aware, affects all the domesticated solipeds, and appears to be communicable to all other animals, except perhaps cattle, by cohabitation, or by inoculation or injection into the blood, or ingestion into the stomach, of the matters containing the virus. At different times it has been believed to be a form of Tuberculosis; at others it was considered a kind of Pyæmia or Septikæmia, developed from other diseases; while, again, it has been supposed to be due to embolic infarctions of the blood-vessels, which might be produced by the injection of any irritating matter into the blood. We will not discuss this part of the subject, further than to say that objections—insuperable objections, it may be—to all these views can

be offered, and that we are inclined to accept the conclusions of those who have made a profound study of the malady, particularly anatomically: viz., that it is a malady *sui generis*, and belongs to the class of granulation tumours or "granulomes."

Its contagiousness is undoubted, and infection can be produced by contact of the diseased with healthy animals; placing the latter in stables or stalls which had been previously occupied by the former; by inoculation; and also through the respiratory, gastric, and cutaneous membranes, by the virus in a *fixed* or *volatile* form. The transmissibility of the disease, however, depends upon the presence of certain conditions, the most important of which are the activity of the virus, and the susceptibility of the animals exposed to infection. Experimentation has been invoked to discover the average susceptibility of animals; and though this is not likely to be always the same, yet it has been found that among horses brought into intimate contact with those which were glandered, only about twenty to thirty per cent. become affected. Direct inoculation has only yielded thirty-five per cent. of successful inoculations.

The *fixed* infecting agent exists in the discharge from the nostrils, in the blood, tears, urine, milk, the solid and fluid contents of the ulcers in the nostrils and nodules in the lungs, and in the saliva and perspiration. The disease may be transmitted by the harness, clothing, etc., worn by the diseased; it may also be transmitted in *coitus* and by suckling; and there can be no doubt as to hereditary transmission. That the contagium exists in what we may designate a "volatile" form, has been often observed, and has also been experimentally demonstrated by inoculating horses with the condensed exhalations and perspiration of glandered animals.

The specific disease manifests itself by certain symptoms, and exists in two forms—Acute and Chronic Glanders. It has also, so far as the exterior of the body is concerned, two modes of manifestation—as Glanders and Farcy. Chronic Glanders may become, and indeed nearly, if not always, terminates as Acute Glanders; while the Acute form rarely indeed becomes Chronic, but ends in death. Farcy and Glanders are merely a clinical,

not a pathological distinction, and are equally virulent. The one may exist before the other; sometimes, though not often, they are independent. But generally they accompany each other, being only local manifestations of the same diseased condition.

The classical symptoms of Glanders are well known; but we fear that it is to their being assumed as *all* and *always* necessarily existing, in order to establish the presence of the disease, that many of the errors of experts are to be attributed.

These classical symptoms are: phagedænic ulceration of the Schneiderian membrane of one or both nostrils,—a tenacious, yellowish-coloured discharge from the nostril in which ulceration exists, and a peculiar indurated enlargement of the corresponding submaxillary lymphatic gland. And certain it is that when these three symptoms are unmistakably present, there is no difficulty in diagnosing the existence of Glanders in an animal. When the lymphatic vessels are involved in the specific inflammation, and Farcy results, this renders "assurance doubly sure."

But those who deny or cannot decide that Glanders is present, when one, two, or even the three classical characteristics of the malady are not apparent, are liable to commit themselves to a grave error, and to mislead others. For experience has proved that we may have the nasal discharge and glandular induration without visible ulceration; that we may have the discharge without the characteristic ulceration and lymphatic tumefaction; and that we may even have Glanders existing in a horse which offers none of these symptoms, or in which they are present—one, two, or three—in a very undeveloped or undecided form. Not only this, but dishonest persons not unfrequently contrive to remove discharge and gland, and employ other artifices to mask the existence of the disease, and make its detection a matter of difficulty to all but those who are vigilant, and aware of such attempts at deception.

In order to substantiate what we have asserted, let us glance at the pathological anatomy of the disease, as elucidated by recent investigation. New Growths, or what are called "neoplastic formations," occur or are developed as nodules (the so-called *tubercles*) in particular parts or regions for which they appear to

have a natural affinity or predilection, as in the nostril; and, in addition, we have in Glanders peculiar infiltrations of some organs and textures, especially the lungs and the mucous membranes of the head. A marked feature in these so-called "tubercles" is their tendency to break up or disintegrate, and give rise to ulcers and abscesses; while the infiltrations either become gangrenous or more or less consolidated. The tubercles or nodules more frequently appear in the mucous membrane of the respiratory passages—in that of the nose, head-sinuses, larynx, trachea, bronchia, and lungs,—as well as in the skin and its connective tissue.

The infiltrations usually accompany the nodules, but in the less acute and chronic forms of Glanders they have a predilection for the lungs, the depending portions of these being most frequently involved. They appear in the form of dull whitish-yellow, semi-solid masses, and are so peculiar that by the eye and sense of touch they can be at once recognised. This condition is often mistaken for the lesion of chronic Pneumonia. In more acute cases, or at an earlier stage, the consolidation is much less complete, and the deposit is more gelatinous. Quite recently, a horse was brought for my inspection, which presented nothing more than a trifling discharge from one nostril and corresponding glandular induration. This, though sufficient to excite suspicion, yet would perhaps not have been enough to warrant a recommendation for the animal's destruction, had it not been elicited that it came from stables where Glanders had been more or less prevalent for years. On examination of the carcase, the most important lesions noted were glander infiltrations in the lungs. These infiltrations are sometimes very marked in the nostrils, where they constitute extensive tumefactions, and have been attributed in part to thrombosis of the blood-vessels.

In addition to these alterations, the nodules becoming disintegrated, we have the characteristic ulcers; and not at all seldom, collections of pus in the head-sinuses, with infiltrations and tubercular deposits in the bones.

Now these depositions and alterations are far from occurring universally throughout the organs and textures named, in the same diseased animal; and this is a most essential

point to be considered in our attempts to diagnose the malady. The expert who is not well acquainted with Glanders, relies for his evidence of its presence upon the signs furnished by an examination of the head; and he is often deceived. For it is a fact, that a horse may be suffering from the disease in a very severe and contagious form, without any reliable evidence being observable in that region. Indeed, it may be asserted that in many instances it is only at a late stage of the disease—when, perhaps, the animal may have infected scores of others—that the head lesions become apparent; and it would appear, from the results of experiments, that the nasal discharge and Schneiderian ulceration are final phenomena.

Often when nothing definite has been discovered in the head nor on the skin during life, a careful examination has revealed the unsuspected presence of Glander ulcers and tubercles in the larynx, trachea, and bronchia, as well as in the lungs. Those authorities who have made the most extensive autopsies of diseased or suspected horses, and have published the results of their examinations, agree in this respect. For instance, Bollinger, of the Munich Veterinary School, in fifty-two cases, found twelve with ulcers in the larynx and bronchia, and in another eleven cases seven were in the same condition. This excellent authority is of opinion that these lesions may be detected in fifty or sixty per cent. of all horses affected with Glanders; a remark which is also applicable to the lesions in the lungs. In fifty-two cases of Glanders and Farcy, the pulmonary organs were healthy in only four; and of these four two were cases of Farcy, one of Acute Glanders, and the other Farcy with secondary nasal symptoms. In the fifty-two cases, the nostrils were entirely free from disease in five.

Bagge, a distinguished professor in the Danish Veterinary School, in examining one hundred and seven horses of a Danish cavalry regiment that were killed within a period of three years, in consequence of being suspected of, or affected with Glanders, found that in ten there were decided and apparent structural changes,—*i.e.*, ulcers in the nasal cavity; in thirteen there were moderately marked alterations; and in fifty-three there were merely nodules in the lungs and a few ulcers in the air-passages.

The latter were horses which, during life, appeared to be quite healthy. In thirty-three cases Bagge found no lesions.

The evidence in this direction is so overwhelming, that it is now acknowledged that our notions of the disease have, until lately, been formed far too exclusively upon its supposed classical or clinical characteristics during life; and that equal significance ought to be attached to the lesions in the lungs, which are almost invariably co-existent, and to the pathological alterations in the trachea and larynx.

Therefore it is, that in making the autopsy of an animal which has been suspected of Glanders during life, the examination should not be merely confined to the head and the exterior of the lungs, as only too frequently happens, but should be extended to the parts we have indicated. It has also been insisted upon that an equally important cardinal point to remember in diagnosing the disease—but, at the same time, one to which comparatively little value is assigned—is the circumstance "that the lesions of the lungs constitute quite as often the primary symptoms, in chronological sequence, as do the changes in the nose or skin." The lung alterations may exist a considerable time without the slightest indication of disease being observed in the head; and that the malady may be virulent in this condition, has been proved by experimentally producing Glanders in a healthy animal in inoculating it with some of the matter of a specific nodule from the lung of a horse in which pulmonary nodules were the only lesion discovered.

In such cases, which used to be designated "latent" Glanders, we must recognise a *volatile*, or "corpuscular," condition of the contagium; and it serves to explain, firstly, those cases in which animals are infected by others who have no nasal discharge, glandular tumefaction, nor cutaneous symptoms, but whose lungs are alone the seat of the specific phenomena; and, secondly, it interprets those instances in which this latent form of Glanders is developed in healthy animals, who, having received the virus, present, outwardly, every indication of perfect health, and do not until after a long period—perhaps many months—exhibit the classical symptoms alluded to.

And as the lungs and bronchia, and the upper portions of the

respiratory tract, are the usual seat of primary lesions, it has been concluded that in a large proportion—possibly a majority—of all cases of Glanders, the infecting agent finds its way into the body, and gives rise either to a primary blood-poisoning, these parts becoming involved secondarily, or develops nodules and ulcers in the lungs, which are afterwards succeeded by general symptoms of the disease. It has also been pointed out that the mucous membrane of the nose may be primarily affected when it chances to be the seat of a wound or abrasion.

Such, gentlemen, are the considerations brought before us in discussing the diagnosis of Glanders; and they are considerations derived from long experience, and the most intelligent observation. In many cases, we shall have no difficulty in arriving at a prompt and sound decision as to whether the disease is present; but in others we may be baffled, and it will require all our skill, all our tact, and all our patience, in order to reach a satisfactory conclusion. In these cases a hurried opinion should not be given; or if it must be delivered through stress of circumstances, it is far better to err on the safe side, after every inquiry has been made, than allow a suspected, but perhaps really glandered, horse to infect others, and, it may be, mankind.

You know the ordinary symptoms of Glanders too well for me to require to enumerate and describe them here. When the three characteristic symptoms, or Farcy, are present, there need not be much doubt. But if we have only, say, the peculiar nasal defluxion and glandular tumefaction present, then there may just be a suspicion. The appearance of the Schneiderian membrane, and the presence of white stellate cicatrices, or fine miliary nodules on it, may serve as a guide. But the history of the case should always, if possible, be obtained. If the discharge and glandular tumefaction has existed for a fortnight or three weeks; if the animal has been in contact with a diseased or suspected horse; has lived in the same stable or establishment with it; worn its harness or clothing; been lodged in a stable where the disease had previously been present; come from a district where the malady prevails, etc., then there cannot be much hesitation. And so with the other symptoms, should one or two of them be absent.

In Acute Glanders, there is no need for hesitation. It is only in Chronic Glanders, the duration of which may extend to months, and even to years, and when the parts which the eye cannot reach in the living animal are involved, that doubts and difficulties exist. We have also some conditions or diseases which simulate it, and which frequently baffle us, if we do not have recourse to experimentation by inoculation. This we shall allude to presently.

In the meantime, let us consider the cases in which we have nasal discharge of a suspicious character, with perhaps implication of the lymphatic glands. All unilateral nasal discharges and complementary glandular induration, particularly of the left side, must be looked upon with suspicion ; and especially if the discharge is of a greenish-yellow colour, thick, tenacious, and contains little white flocculent clots. More particularly are they to be looked upon with suspicion if they are of a greenish or chocolate hue, are streaked with blood, and have a foul odour ; clotting in masses around the margin of the nostril, dust-covered, interfering with the respiration, and causing the animal to resort to powerful expulsive efforts to get rid of it.

The discharge is only fœtid when the bones of the head or the lungs are seriously implicated. I do not place any positive reliance on the water-test for the discharge of Glanders. When dropped in water, this discharge is partly dissolved ; the insoluble portion forms an emulsion when shaken, but is deposited again at the bottom of the vessel as a whitish flocculent or granular matter. But I would not at all venture to designate these characters of the nasal defluxion as infallible *criteria* of the presence of Glanders.

When we have, in conjunction with this discharge, the peculiar hard, nodulated, egg-like swelling and induration of the lymphatic gland, which makes it cling more closely to the jaw-bone than does any other kind of inflammation, and is not accompanied by the surrounding infiltration and tumefaction or pain that marks the ordinary inflammation of the gland, nor shows any indications of suppuration,—then the suspicion, in the absence of ulceration, becomes stronger.

But the submaxillary glands may have been extirpated by the

dishonest dealer, and the discharge scrupulously removed, or imprisoned in the nostril by "plugging." Then the expert should carefully look for evidences of extirpation, in the form of cicatrices in the intermaxillary space; and endeavour to produce the discharge by every possible means, if he cannot have the animal under his own personal surveillance for several days.* The existence of discharge may be ascertained in making the animal sneeze, by closing the nostrils for a brief period, blowing up snuff, powdered ginger, or pepper on the Schneiderian membrane of one side, tickling this membrane with a feather, or pressing the larynx or trachea to cause coughing. When the discharge is scanty, or has been removed in order to deceive, one or more of these measures will generally make it manifest. Depressing the head by laying hold of the ears, as well as exercise, will also produce this effect; but it must not be forgotten that the fraudulent owner or vendor may have resorted to some of these measures immediately before the examination by the expert. If no discharge is therefore apparent after these tests, an opinion should not be at once given that it does not exist; but rather the animal should be again seen under more favourable circumstances, and when the deception has been prohibited. It may be well to examine the manger, rack, and partition of the stall in which the horse stands or has stood, in order to discover whether traces of dried or even moist discharges are to be found. If these are present, they may still be employed for inoculation purposes.

* In *Veterinary Sanitary Science and Police* (vol. i., p. 524), I have given an instance which came under my own observation in 1874, in which three veterinary surgeons pronounced a horse free from Glanders that had been "doctored" in this manner, and which had infected every stable in which he stood in the locality. Lafosse, in his *Traite de Pathologie Vétérinaire* (tome iii., 2me partie, p. 975), strange to say, gives a case so similar, even to the colour of the animal, that I cannot refrain from transcribing it. It occurred at Castres, France. A bright grey mare, aged, was sold three times in the course of two months. (Our case was sold as often, but in a longer interval.) In the three stables which it inhabited, it communicated Acute or Chronic Glanders to horses, mules, asses, and a *bardot*—small mule. The third purchaser instituted legal proceedings against the second. The mare was examined by Lafosse and two other veterinary surgeons, and was found to have traces of ulcers on the pituitary membrane, and a cicatrix on the skin in the intermaxillary space—doubtless the vestiges of the operation for extirpation of the gland. Rey, one of the experts, denied the existence of Glanders; consequently the tribunal ordered the destruction of the mare. This was complied with; and on examination, there were only found the pituitary cicatrices, and pulmonary induration, with some miliary tubercles. These lesions appeared to be of long standing; and yet this animal had been remarkable for the readiness with which it could communicate the malady to the solipeds which had cohabited with it.

With regard to the ulcer, when visible, we have not much to note. *Simple* ulceration is not at all unfrequent, and this must be familiar to all of you. A non-specific ulcer has a healthy appearance, is generally of a bright-red colour throughout; it is shallow, circular, and regular at its margin, and readily heals, leaving scarcely any cicatrice or trace of its existence. In Glanders, the complication of the Schneiderian membrane is marked by a change of tint, and the appearance of small yellowish-grey nodules, pustules, or minute patches. These break up, and become chancrous erosions or ulcers, through a process of disintegration which we need not here describe. Suffice it to say that these ulcers, which are, from confluence, of various forms and sizes, are irregular in outline, excavated, ragged: have an unhealthy, red, shining, speckled aspect, and the margin is of a yellow or yellowish-red hue—very rarely red; they more or less rapidly extend in surface and depth. They are also surrounded by a red areola. Sometimes they are covered with a dark-brown or greenish-coloured crust, due to the dust from forage, etc., accumulating on them. When they heal, as they sometimes do, spontaneously, a cicatrix always remains, but the membrane is not regenerated; a new cicatricial tissue takes its place, and this offers the important peculiarity of being more or less stellate in shape and white in colour. The ulcer of Glanders has a tendency to become developed rather high in the nasal passages; whereas the non-glanderous pustule, vesicle, or abrasion is more frequently observed at the lower extremity. This, however, must not be accepted as always the case, as I have found Glander nodules, ulcers, and cicatrices both at the lower part of the *septum nasi* and in the false nostril; it is most important to examine the inner aspect of the latter in suspicious cases.

These symptoms should serve as a guide to us in diagnosing Glanders. But when they are not present, and the lesions of the malady are more or less invisible, then we must exercise all our skill, and practise the greatest reserve, before finally deciding as to the nature of the disease in a suspected animal.

In addition to the three classical symptoms, there are other two which should be looked for, but which have not in this country,

so far as I am aware, received the attention they deserve. I refer to the *cough* and the *respiration*. When the mucous membrane of the larynx and bronchia are involved, or are alone affected, or when the lungs are the seat of nodules and infiltration, then we have a frequent, dry, hollow, hacking cough, not unlike, and yet different from, that accompanying the disease vulgarly known as "broken wind."

When the larynx and trachea are involved, a discharge from the nostrils may be present; but it is generally intermittent, and follows an attack of coughing, which may be distinguished by the sound of the cough, and also by auscultation, as laryngeal or tracheal. These attacks of coughing are rather frequent in some cases, and when ulceration is somewhat extensive the discharge is streaked with blood, or hæmoptysis may accompany or follow the coughing. In these cases, if careful examination is made, the lymphatic vessels in the jugular furrow, as well as the antethoracic lymphatic glands, may be found to be implicated.

When the lungs are involved, either alone or with other organs and textures, the cough is at first dry, hollow, and hacking, as already said, and not unlike that of "broken wind"; but latterly it becomes soft and moist, and accompanied by discharge.

This cough is generally most marked in the morning when the animal is taken from its stable to the cold air outside, when it is removed from a cold to a warm place, and in damp weather. The manner in which respiration is performed is also changed when the lungs are notably affected; and in addition to being increased in frequency and in effort, I have in some cases noticed it to be irregular, as in "broken wind."

Auscultation and percussion will be, in such instances, important aids in assisting us to diagnose the existence of the disease, and especially in distinguishing it from "broken wind." In the larnyx and trachea, when they are diseased, a rough, rasping sound will be perceived,, with sometimes a mucous *râle*. When the lungs are affected, there is a diminution or total absence of the respiratory murmur in places, and especially inferiorly; and towards the end mucus or cavernous *râles*.

The condition of the animal will also to some extent aid us; as when the lungs are much affected we have more or less

emaciation, unthriftinesss of the coat, exhaustion after trifling exertion, discharge of muco-purulent masses, sometimes fœtid, from the nostrils, and other equally pathognomonic symptoms.

The absence of fever in Chronic Glanders may be another guide, though it must be confessed it cannot altogether be relied upon; as in some cases we find slight febrile attacks occurring periodically.

When the condition of the mucous membrane of the head cannot be ascertained by visual examination under ordinary circumstance, then if the disease is supposed to be located in the sinuses of the head, we may have recourse to trepanation. Indeed, in common diseases of these cavities, when ordinary measures fail, this operation is usually resorted to. But it has been found, by one authority at least, that in from seventy-five to ninety-five per cent. of glandered horses there is disease of the mucous membrane lining them. Then the membrane has a swollen, roughened, or nodular aspect; and the nodules or irregularities are said to be developed in such large numbers after the operation, that they fill the cavity and invade the opening, preventing the wound from healing. When tracheotomy has been performed in cases in which the trachea is involved in the glanderous affection, the same occurs in the wound.

But of all the aids to diagnosis, perhaps none, in doubtful cases, is equal to inoculation. It is true that severe exertion and exposure to unfavourable influences will, if continued for a certain period, generally produce an unmistakable development of the disease; but these cannot always be invoked at the proper time.

It is, therefore, often necessary, in doubtful or debatable cases, to resort to experimental inoculation, in order to ascertain if the suspected animal is really affected with Glanders. And this test I would always counsel others to adopt, as I have had to employ it; and have been always successful in satisfying myself, through it, whether the disease was present or not.* Nevertheless, it has

* In 1873, Professor Bollinger, of the Munich Veterinary School, inoculated the ear of a rabbit with fresh discharge from the nose of a horse. It died in about three months, and on examination of its body the specific ulcers of Glanders were found on its ear, with partial disorganization of the cartilage; there was also inflammation of corresponding lymphatic vessels, and specific nodules in the frontal bones and sinuses,

to be remembered that the inoculation must be carefully made with the nasal discharge at different times, and, if possible, with

with tubercles and ulcers of the mucous membrane of the nasal cavity. In the same year a goat was inoculated with the secretion from a Glander ulcer in the nose of a horse, the inoculation being performed by injecting the matter, diluted with water, into the abdominal cavity. In seven weeks there were produced specific ulcers in the *septum nasi*, accompanied by profuse purulent discharge from the nostrils, Lymphangitis of the corresponding vessels, and Lymphadenitis of the laryngeal glands—the whole forming a typical picture of Acute Glanders. There were also numerous specific nodules in the peritoneum, spleen, lungs, and various muscles.

On March 5th of last year, the district veterinary surgeon, Klieber, sent Professor Bollinger a few drops of the discharge from a horse suspected to be suffering from Glanders for nearly five months. The Munich Professor inoculated two rabbits with the matter; inflammatory phenomena occurred at the places where the wounds had been, but they disappeared in the course of a few days. Thinking that the matter sent to him might have been derived from parts yet healthy of the mucous membrane of the suspected horse, and considering that in this case the non-success of the inoculations would not permit of a definite conclusion with regard to the absence or presence of Glanders, Bollinger requested Klieber to send him another supply of matter.

On March 11th this was received, and with it he again inoculated the two rabbits. In one of these the inflammatory phenomena supervening on the operation had completely disappeared within eight days, and the wounds were cicatrised. With the other there was set up a somewhat considerable amount of inflammatory redness, as well as an ulcer, which made such rapid progress, that already on the 18th of the same month it had perforated the cartilage of the ear.

The ulcer was about forty-five centimetres in length, by one centimetre in breadth, and its surface was covered by a dry crust, the removal of which revealed the loss of tissue the part had sustained. The margin was irregular, and the bottom of the excavation had the lardaceous appearance which gives the Glander-ulcers their characteristic aspect.

The ulcer was surrounded by a perfectly distinct red areola, and the tissues in the immediate neighbourhood were greatly thickened. A hard indurated cord passed from this ulcer towards the base of the ear.

The general health of the animal was good, though the temperature of the body was slightly increased.

The ulcer gradually increased during the succeeding days; the centre preserved its dull appearance, and looked lardaceous and eroded.

On May 24th, a hard nodosity about the size of a pea was felt on the indurated cord, about fifteen centimetres from the ulcer. The centre of this nodosity was in process of purulent destruction, and the nodosity itself was surrounded by a hard infiltrated capsule. This tumour, therefore, presented a well-marked analogy with the farcinous tumours.

Taking these facts into consideration, Bollinger did not hesitate to declare that the horse from which the matter was obtained was affected with Glanders. It was therefore killed, and the autopsy confirmed the correctness of the diagnosis.

With regard to the rabbit, forty days after inoculation the ulceration persisted. When the sanguineo-purulent crust was removed, the lardaceous appearance of the centre was as marked as ever; its nodular base was about the size of a haricot, and the whole was encircled by a very marked injected areola. The remainder of the ear was highly injected, but there was no lesion in the nose. The rabbit lived until the one hundred and thirtieth day after inoculation, when it died. The nose was free from disease, but in the lungs were a number of disseminated Glander-looking nodules.

Bollinger adds that this observation confirms what he had already stated elsewhere (in Ziemsen's *Handbuch der Speciellen Pathologie und Therapie, Band III.*, "Zoonosen"), to wit: *that the inoculation of matter from suspected creatures, in other animals susceptible of contracting the disease (sheep, goats, rabbits) is, in doubtful cases, one of the most certain means of arriving at a diagnosis.*

But Bollinger is of opinion that experiments should continue to be made, as it is only

those portions of the discharge which least resemble pus or mucus. They must also be made with the fresh material. And even when every precaution is taken, the inoculations may fail when the inoculated animals are not in a condition to receive the contagion—as sometimes, though rarely, happens.

It is of little use attempting this test upon the suspected animal, as auto-inoculations rarely indeed are successful. We must employ animals which are most susceptible, as a worn-out horse—or, better still, an ass,—or for convenience a sheep, goat, or rabbit, or all of these. The inoculations may be made either on the ear, in the nostril, in the axillary region, or on the side of the face ; and two or three places may be inoculated.

On the score of humanity and economy, we are justified in having recourse to inoculation, and if necessary sacrificing one or two comparatively worthless animals, in order to prevent great public loss, as well as suffering in other creatures—quadruped and biped.

If the inoculations are successful, then we shall have either Glander-ulcers produced at the seat of the introduction of the virus, or generalised and fully developed Glanders.

Another aid to diagnosis will, we trust, soon be in every-day use. It has long been observed that in Glanders, Leucocytosis of the blood is a constant feature : the multiplication of the white globules giving it a similar appearance to that which it presents in Leukæmia. This increase is supposed to be mainly due to the irritation excited in the lymphatic glands by the poison. Well, it so happens that by a simple process we are now able to estimate the proportions of the red and white corpuscles ; and we have reason to hope that those veterinarians who use the

the positive results of these researches which may be invoked in forming a diagnosis ; negative results cannot occur in every case. In Chronic Glanders, it may easily happen that the matter collected for the test experiment will not contain anything more than a healthy, non-contagiferous secretion, and therefore will not produce the consequences of a Glander inoculation. It will, then, be always useful in these experiments to employ matter collected at different times, and to inoculate several animals. It must also be remembered, that when decomposed nasal discharge is used for inoculation, lesions may be produced that, at least at the commencement, present some analogy to Glander-ulcers ; but these generally heal rapidly.

Quite recently, Bollinger has published the results of some extremely interesting experiments with the virus of this disease, which we shall take an early opportunity of placing before our readers.

microscope will be able to utilise this means in the diagnosis of this formidable, and not always easily detected scourge.*

And now, gentlemen, I have brought the few discursive remarks which I promised to offer for your acceptance to a close. My object in bringing them to your notice has been to endeavour to warn those who have not carefully studied the disease—no matter what their experience may have been—against hasty, ill-considered conclusions in diagnosing it. Grave mistakes have been made in this direction; and these mistakes have not only done us harm professionally, but they have exposed the public to great and unnecessary danger and loss.

In no disease should the expert exercise greater care in doubtful cases; and time is needed, often a somewhat lengthened period, during which every precaution should be observed, in order to arrive at a final decision.

Medical treatment may serve to mask the existence of the disease in certain cases, and this must not be overlooked. For my own part, I always view with suspicion, and for many months, a horse which has had the characteristic gland of Glanders, and especially if there has been nasal discharge. These symptoms may, by treatment, be made to disappear, and even the nasal ulcers to heal in rare instances; but it is indeed to be doubted

* In "Notes and News" in the last number of the *Veterinary Journal*, we alluded to a new invention by which an enumeration of the blood-corpuscles could be accurately made. M. Malassez is the inventor of an instrument of great precision likewise; and Professor Bouley has enlisted his assistance in determining the extent to which this excess of white corpuscles—this Leucocytosis—exists in Glanders. Though only three experiments were made, and though we must take into consideration the fact that the proportions between the red and white corpuscles are never constant, even in health; yet the results are sufficiently striking to warrant the belief that we may find in this direction a useful aid to the diagnosis of Glanders in doubtful or in latent cases.

The first blood examined was that from a well-fed healthy horse. In a cubic millimetre of this blood were found :—

Red corpuscles (which we shall indicate as R.C.) . 4,980,000 } W.C. / R.C = $\frac{1}{1166}$
White corpuscles (indicated by W.C.) . . . 4,000 }

The next blood was from a horse offering only one symptom of Glanders—the enlarged indurated submaxillary gland. In this were found :—

Red corpuscles, R.C. . . . . 2,310,000 } W.C. / R.C. = $\frac{1}{481}$
White corpuscles (very small) W.C. . . . . 4,700 }

The third quantity of blood was obtained from a horse suffering from confirmed Chronic Glanders. It showed :—

Red corpuscles, R.C.. . . . . 2,890,000 } W.C. / R.C. = $\frac{1}{214}$
White corpuscles, W.C. . . . . 13,500 }

If this marked anæmic condition of the blood is a constant feature in Glanders, it will be seen that it may be of valuable assistance in suspicious cases in which one or two, or even the three classical symptoms, are absent.

whether the poison is ever expelled from the system, and whether it may not, by some slight exciting cause, be developed again and lead to a fatal termination.

In the presence of such a malady, all the caution and skill of the scientific veterinarian are needed. If the influence of your Society leads to the dissemination of the advice which, by your courtesy, I have had the honour of tendering for your approval, and, if need be, emendation, I shall deem myself fortunate in having had the privilege of occupying your attention on this occasion, and for so long a period.

THE ADMISSION OF FOREIGNERS AND MEDICAL MEN TO MEMBERSHIP OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

BY JAMES LAMBERT, M.R.C.V.S., 17TH LANCERS.

THE admission of gentlemen possessing medical degrees, and of foreigners, to examination for the diploma of the Royal College of Veterinary Surgeons, is, it appears, still the subject of discussion at the meetings of the Council, and is regarded with much interest by veterinary surgeons generally.

As the writer is opposed to any one (no matter what his qualifications) being for the future admitted to the profession, either through the teaching colleges or by examination, in an irregular manner, he begs to be allowed to give reasons for himself and very many who agree with him, for this opposition.

In doing so, any idea of ill-feeling must be banished; as he numbers many friends in the medical profession, for which he has the greatest admiration and respect.

It was thought that open discussion of this matter might give rise to erroneous impressions, and possibly to some bitterness of feeling; but since the report of the last Council Meeting, in the February number of the *Veterinary Journal*, it is felt that no benefit can arise from reticence.

First, as to the admission of candidates from other countries

to examination on irregular terms, because they already possess a foreign diploma. It is reasonable to suppose that such diplomas will be from colonial veterinary schools or colleges; that such schools will be, like our own, commercial ventures, and consequently in a struggling condition in the first years of their existence. It may also be assumed that diplomas will be granted by them on very easy terms, as has been too much the case in our own colleges;* six months' study was with us at one time deemed sufficient, when veterinary medicine was called by the very degrading and false term of an *art*, instead of by its true designation, a *science*.

It is desirable to consider for a few minutes what kind of examination might be thought sufficient by any school not subject to the control of authority superior to private interest—an authority such as our own Council now happily is, actuated only by a wish for the advancement of our profession as a whole, and labouring for its liberation from the fetters of ignorance and prejudice, which have thus far kept it down and hindered its development. It may be assumed that it would be the interest of such schools to attract students by admitting them to an easy preliminary educational test, and to a superficial final examination, both of which have so lowered the profession in this country.

If any one, or all, of the above premises be granted, then let us by all means strictly forbid any irregular entrance to the profession that can possibly lead to abuse.

It is hoped that it will not for a moment be supposed that these remarks are dictated by any ill feeling towards the colonial schools; it is only wished to provide strict and efficient safeguards against injury to the profession, whether here or abroad.

Second, as to the admission of medical men. Now that our profession is becoming able to act for itself, it is probable that such cases will work to the disadvantage of one or the other profession. Either the medical veterinary surgeon will give advice for the biped or quadruped gratis, or he will combine the two, to the benefit of neither profession, but rather to the great

* We do not know of any veterinary schools—foreign or colonial—at which the period of study is less than it is now in our own.—Ed. *V. J.*

disadvantage of the practitioner who conscientiously confines himself to the particular branch of medicine which he has elected to follow.

It may be reasonably assumed that any medical man wishing to obtain the diploma of veterinary surgeon, will do so with the intention of making the latter subordinate to his own profession. It is probable that, at least in the army, it would be sought by gentlemen in the Indian service. They would consequently, as undoubtedly the higher branch of medicine, and as probably superior in relative military rank, take precedence on any Government Board or Commission as president, to the detriment of the veterinary surgeon; and though the latter might really be the guiding and experience-finding spirit, he would play only a minor part, whilst the former would reap the chief credit and reward. The writer can give one important, and several minor instances to prove that this is no false alarm, and has little doubt that such cases would often occur, both in military and civil practice.

Would it not be injudicious, when every one allows that the college period of study for veterinary students is more than half too short for the proper acquirement of a knowledge of the necessary subjects, for our governing powers to commit themselves to the opinion that half the present absurdly brief time is sufficient for a candidate with presumably little or no previous acquaintance with what he seeks to be declared competent to practise? Would the medical colleges reciprocally admit veterinary surgeons to an irregular examination? It is not to be thought that they would.

But it may be urged that all this can be guarded against by the examinations, which could be made thorough tests of professional fitness. That is very doubtful; and that ours are not so at present is evident to all who know how they are conducted, and their results, and who see how a judicious system of temporary cramming enables the incompetent to pass. The aim should be, not to make as many new veterinary surgeons as possible, but to exclude incapables, and avoid recruiting the profession by mistaken, because injurious, leniency.

We must show the world, and let candidates know, that vete-

rinary medicine is truly a science, and that its acquirement is arduous and difficult. Nothing has such an injurious effect on the public mind as to see, as is now often the case, a young man with little or no knowledge of horses or cattle, and often engaged in an occupation entirely unconnected with them, suddenly go to a veterinary college, and, *mirabile dictu*, in eighteen months' time appear as a full-blown veterinary surgeon. What confidence can we expect when such a state of things prevails? and can it be wondered at that so much professional ignorance exists?

Any examination out of the prescribed course, besides being irregular, demands the suspension of a byelaw, which, it is respectfully suggested, should never be done without grave necessity, or without some reason of great advantage to the profession generally. On any other ground, it is here strongly urged that irregular admission to the profession should be for the future forbidden. It may be argued that the admission of medical men would benefit the profession; but that appears almost like hoping to cure a sickly tree by grafting a few fair-seeming flowers on its topmost branches. Let them by all means be admitted on the same terms as other students; but any favouritism will be injurious, and destructive of confidence.

The members of the veterinary profession are always grumbling about the treatment they receive from the Government and the public; but they have only themselves to blame for it. If they will not protect and help their own science, what can they expect? The profession has for too long a time been painfully and slowly crawling; and has but too frequently been the blind dupe of a few selfish individuals. It is now strong enough to walk, and should begin to do so. For the first time in this country it is creating a literature of its own that is worthy of it; but it can never take its true position until it resolves to control itself for the general advancement.

With respect to the grumblers of the profession, they are numberless. Very many of them glory in being veterinary surgeons, and lose no opportunity of letting people know it. They profess, however, to be very desponding; and for fear of

having to exert themselves, say that nothing can at present be done. They must indeed be shortsighted if they do not see what progress has already been made by a little effort; but they grumble and do nothing, when there is still so much to be done. They are of those who vainly think that the fruit they long for will come to them to be plucked, because they have not the energy to go and gather it.

If they will help ever so little, they will encourage those who are working hard for the profession, and who can see what a much brighter future awaits it. Let them complain as much as they will, but let them at least be *active grumblers*, and at the same time endeavour to aid our President and Council in their most generous and disinterested labours for our advancement.

The so-much-needed extension of the compulsory period of college study was also discussed at the Council Meeting; and a proposal was made that the time should be less for a student who had been apprentice to a veterinary surgeon. It is obvious that such an exception would be an irregularity, and therefore injurious. The time spent by the intending student with a veterinary surgeon, whether as apprentice or otherwise, is only for his own advantage; and whether its necessity be acknowledged or not, should not, it is submitted, be taken cognizance of by the Council. The suggested exception would open the door to all sorts of abuses (and we have already too many), which will occur to those who give a few minutes' consideration to the subject. Most candidates will find two or three years with a good veterinary surgeon of the greatest assistance to them; therefore this question will soon find its own level.

The above opinions are not dogmatically expressed, and will of course only be accepted for what they are found to be worth; but it is thought that much good may arise from a full consideration of the questions involved.

Editorial.

THE *VETERINARY JOURNAL.*

We have to record an event which is, we believe, unparalleled in professional journalism. The first edition of the February number of the *Veterinary Journal* was exhausted a few days after publication, and a second edition had to be issued this also, at the moment of our going to press, is expended, and a third edition is ready. This announcement, it must be insisted upon, is not made in a spirit of self-glorification, but merely to prove that our object in assuming the onerous and responsible task of representing the veterinary profession in English-speaking countries, and testifying to the strong claims of that profession on the score of humanity, science, and utility, is duly appreciated by the public.

At the same time, this unprecedented success of such a juvenile venture, while stimulating us to continue, and if possible increase our endeavours to promote the advancement of veterinary science and the welfare of its students, and therefore to benefit the public and ameliorate the condition of animals—to protect them from disease, and spare or relieve them from pain—imposes greater responsibilities upon us; these can only be lightened by the always valuable aid and countenance of our appreciative colleagues.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

It affords us much pleasure to announce that Mr. Thos. Walton Mayer, M.R.C.V.S., late of the Royal Engineers, Vice-President and Examiner in Veterinary Surgery in the Royal College of Veterinary Surgeons, has been selected to fill the Professorship vacated by Dr. McBride.

VETERINARY SANITARY SCIENCE IN THE ARMY.

In a paper on "Veterinary Science" read by Colonel Sir F. Fitzwygram, Bart., President of the Royal College of Veterinary Surgeons, before the Portsmouth Literary and Scientific Society, the Colonel stated, as the result of his own experience, that veterinary sanitary science had reduced the loss of horses in our cavalry regiments to a minimum, and the annual "casting" of horses in a cavalry regiment to ten per cent.; giving an average service of ten years to each horse carrying eighteen stone on its back at a rapid pace over rough ground. This result, he added, might stimulate the cupidity, if not the humanity, of a very large class who used up horses in about two and a-half years.

TRANSMISSIBILITY OF FOOT-AND-MOUTH DISEASE TO MANKIND.

THE sanitary inspector for the parish of Cambusnethan, near Glasgow, has called attention to the cases of a number of children in a village who, he thought, had been made ill with milk supplied by a dairyman in Carluke. He had visited seven different families at this village who had been supplied with the milk, and found that all who had used it had been seized with illness; altogether, about thirty persons had been affected, but none of the cases terminated fatally. Samples of the milk had been sent to Glasgow for analysis, but no poisonous substance could be found in it. It was not then known, that the cattle from which the milk had been obtained were affected with Foot-and-mouth disease.

A similar occurrence has been recorded from Morayshire; and in the *British Medical Journal*, Mr. Lingen, of Hereford, gives an interesting case. He was called, in June last, to the young daughter of a farmer, whose cows were suffering from the disease. The child, usually healthy and strong, had been ailing for four days, was fevered, and had headache: there was much debility, and utter loss of appetite. No soreness of mouth or rash were apparent. Two days afterwards—the sixth of her illness—a peculiar semi-vascular rash appeared pretty generally, affecting some parts more than others. For instance, the left side of the face and ear were "all in one"; while the opposite side had only scattered patches, from the size of a fourpenny-piece to that of a sixpence. There were aphthæ within the mouth, chiefly on the left side, affecting the tip, side, and under part of the tongue, and the inside of the lower lip. These, on breaking, left superficial ulcerations. The fingers, especially the tips of them, were affected with little patches of rash, and the toes in less degree; prostration and anorexia continued throughout the illness. The disease being unsuspected for four days after Mr. Lingen was called in, the children of the family used the uncooked milk from the affected cows for some days before the patient became ill. She was, habitually, a larger consumer of milk than the others.

PROTECTION OF THE VETERINARY PROFESSION AND THE PUBLIC.

FROM Manchester we learn that the Conservative candidate, Mr. Powell, at a public meeting of the electors, and in reply to a question put to him, said he thought the Members of the Royal College of Veterinary Surgeons were entitled to the same protection against the fraudulent use of titles as Members of the Royal College of Surgeons.

The Liberal candidate, Mr. Jacob Bright, at another meeting in the same city, and in answer to a question by the principal veterinary surgeon in Manchester as to whether he would vote for an Act empowering the Royal College of Veterinary Surgeons to prosecute any unqualified person using the style and title of Veterinary Surgeon, said if such a matter came before the House of Commons, and he was a Member, he would give it full consideration.

EPIDEMIC DUE TO MILK.

An alarming epidemic has broken out at Eagley, near Bolton, Lancashire, —due, it is supposed, to the milk from cows on one farm having been contaminated with sewage water of which the animals partook, or from water added to the milk or used to clean the cans. As many as 120 persons have been attacked, but the malady does not appear to be very fatal. The symptoms are described as a mixture of Typhoid Fever and ordinary blood-poisoning.

THE FITZWYGRAM PRIZE COMPETITION.

We have to direct the attention of those students at the Veterinary Schools, who may graduate at the ensuing examinations of the Royal College of Veterinary Surgeons, and also of those who have obtained their diploma since last July, that the competition for the Fitzwygram prizes will take place next April. The date will be announced in our next number, as the names of intending competitors are to be forwarded to the Secretary of the Royal College of Veterinary Surgeons at least one week previous to the competition.

The value of the prizes are respectively, £50, £30, and £20. The competition consists of (1) a written, and (2) a practical and *vivâ-voce* examination, on subjects pertaining to veterinary science. To the first part 1,200 marks will be assigned, and 600 to the second. In the first part the marks will be allotted as follows:—Anatomy 300, Physiology 300; Pathology, 300; Chemistry, 150; Botany and Materia Medica, 150. In the second part they will be:—Diagnosis of Disease, 200; Shoeing, 100; Examination for Soundness, 200; Selection of Horses for Specific Purposes, 100.

A competitor failing to obtain half the number of marks assigned to any of the papers in the written examination, will be excluded from the second or *vivâ-voce* examination.

The first portion of the examination will take place in London for the Royal Veterinary College, and in Edinburgh for the schools in Scotland. The five best competitors in the first, or written examination, will be selected for further competition in the practical or *vivâ-voce* test. This final competition will be held in Edinburgh this year; and to carry it out without loss to the competitors of the London School, the donor of the prizes has generously allowed the sum of £4, for travelling and other expenses, to each of those selected to proceed to Edinburgh.

We trust that this inter-scholastic competition may produce the best results to our science, by stirring up a spirit of emulation in the acquirement of that knowledge which is so essential, not only to individual, but to general professional advancement. Such, we are certain, is the desire and sole object of Sir Frederick Fitzwygram in offering these handsome inducements to study; and we have no doubt that the entire body of the profession will watch with keen interest the result of the competition from year to year. To the intending competitors we can only say, *Palmam qui meruit ferat!*

JAPAN.

In the last number of the *Veterinary Journal*, we referred to the appointment of Professor McBride, late of the Cirencester Agricultural College, to the important post of organizer of an Agricultural School at Yedo, the capital of Japan, and lecturer on Veterinary Science to the students attending the school. While we shall watch with the greatest interest his progress in establishing such a valuable institution in that most—for an Eastern country—civilized region, and shall gladly note his success in imparting Western notions of veterinary medicine, and those branches of veterinary science which are of such value to agriculture, we shall also look forward with much interest for information with regard not only to the maladies existing among animals in the "Land of the Day-dawn," but also for the opinions of the Japanese themselves concerning these maladies. For both they and the Chinese are, in their way, close observers of nature, and their knowledge of medicine is of very ancient date. In our "Travels on Horseback in Mantchu Travels," we have alluded to the veterinary notions of the Chinese; and one of their standard works on Veterinary Medicine and Surgery, in either two or three volumes, we presented to the library of the Edinburgh Veterinary College on our return from China.

In the meantime, it may be interesting to note that in Japan the principal useful indigenous animals consist of horses of a small size, very spirited and enduring, and chiefly black in colour; a small breed of oxen; goats, rabbits, and wild boars. It appears that imported animals, such as sheep and pigs, are rare. Sheep, though they are numerous in North China, the opposite coast, and where we have seen large flocks, do not appear to thrive in Japan; and this will be one of the subjects, we presume, which Professor McBride will be required to investigate. So far as we could ascertain, the ass and mule were unknown while we were in that latitude; though they also are very common, and of excellent quality—especially the mule—in North China.

There is a large breed of black bulls, which are used for carrying heavy loads (as there is little wheel transport, there being scarcely any roads); many of these were purchased for the war in North China in 1860, but they all died in a very short time. All the Japanese horses and cattle we saw were entire, and we do not know if the emasculation of animals is ever practised, though it is usual in China. Shoeing horses or cattle with iron shoes was not known until our arrival in 1860; the hoofs being protected on occasions by straw sandals, some of which we presented to the Museum of the Royal College of Veterinary Surgeons on our return home. It is possible that nearly all the horses are now shod after our fashion. While the Japanese were ignorant of shoeing, we found the Chinese horses and draught oxen all shod, as a rule, in the North.

Of the diseases among animals in Japan, we can say but little. An epizoöty broke out among the horses we purchased there for the campaign, and the mortality was very great. We were then with the army advancing on Pekin, and could not be spared to go to Japan. The

principal symptom was immense swelling of the lower part of the head, and death appeared to have been due to suffocation. We are not certain whether Cattle-plague, which often visits North China very severely, has ever appeared in Japan, but it should be looked for. Rabies Canina, which is not at all unfrequent in North China, may also manifest itself among the Japanese dogs.

It is probable that, on the whole, there are not many contagious maladies in Japan; though how long its insular position may protect it, it would be difficult to say,—unless Professor McBride, with his experience of the lamentable effects produced by imported diseases in these islands, can rouse the Japanese Veterinary Department (if they should make up their minds to indulge in a luxury of this kind) to more enlightened and energetic action than has been hitherto exhibited in the country he is about to leave.

HYDROPHOBIA IN RUSSIA.

In an interesting paper in the *St. Petersburger Medicinische Zeitschrift*, for 1875, on the "Nature of Hydrophobia and its Treatment," Dr. Hermann, of that city, informs us that in the different provinces of the Russian Empire, Rabies (Wuth Krankheit) in animals is becoming much more frequent with the advance of civilization, and that St. Petersburg, more than any other large city in Europe, is scourged by it. Consequently, Hydrophobia is increasing every year. In proof of this, he gives a table showing the number of cases of bites inflicted at St. Petersburg by rabid and suspected dogs, as well as by dogs in health and suffering from other diseases, for a period of twelve years. From this we observe that in 1863 the cases of bites from rabid dogs were 8, suspected dogs 7, dogs suffering from other diseases 20, and healthy dogs 80; while the number of people who perished from Hydrophobia was only 3. From that year up to 1874, there has been a varying increase, until in that year 49 people were bitten by rabid dogs; 12 by suspected dogs, 74 by diseased dogs, and 268 by healthy dogs; while the number of people who died from Hydrophobia was 8. Altogether, in the twelve years, 2724 people were bitten by dogs, of whom 1895 were healthy, 103 suspected, 198 rabid, and 528 affected with various diseases. In the city, during that period, 25 people perished from Hydrophobia, and 22 in the Obuchoff Hospital.

Dr. Hermann discusses the nature, causes, prognosis, symptoms, pathological anatomy, and treatment of the disease; but we need not dwell on this portion of his paper, as it does not contain anything novel. He arrives at the following conclusions:—

1. All persons bitten by rabid animals need not necessarily suffer from Hydrophobia, or "Lyssa," as Hermann designates the disease;

2. Nevertheless, the bite of a rabid, as well as that of a healthy but enraged animal, may produce the disease; therefore every injury caused in this way must be promptly, and properly, treated;

3. The real prophylactic measure consists in local treatment by the knife, a high temperature, or strong corrosive agents; without energetic local treatment, no internal (or general) treatment can be relied upon;

4. When the disease becomes developed, the surgeon can only resort to palliative treatment; none of the remedies hitherto tried having been found to ward off a fatal termination; and with Lebert, we must hope that the future will provide us with a remedy which the past has refused.

HYDROPHOBIA FROM THE BITE OF A NON-RABID DOG.

On January 25th last, an inquest was held at the London Hospital on the body of a shipwright named John James Sutton, aged twenty-three years. The deceased, on returning home on the evening of the 16th December, told his wife that he had been bitten by a dog on the leg, face, and arm, and that the wounds had been cauterized by a doctor. He went about his work as usual, and the wounds healed up. On January 20th, he became so ill that his wife fetched a doctor, who said he was suffering from Hydrophobia, and must be removed to a hospital. He died on the 22nd of that month. R. Youle, a lad, stated that on the night of the 16th of December he saw a large black dog lying near a lamp-post in the East Ferry Road. Turning round, he noticed the deceased, who was behind him, tread on the dog's toe. The animal sprang at him, first biting him on the leg, and then on the arm and face. Witness never saw the dog before that, but had since seen it in the street. Mr. E. Parkin, of 22, Queen's Cottages, East Ferry Road, the owner of the dog which, it was alleged, attacked the deceased, produced the dog—a black retriever—which he said was quiet and inoffensive. It had never been ill, and was never out of his house late at night. Isabel Youle, mother of the lad who witnessed a dog bite the deceased, stated that on the night in question, at ten o'clock and half-past ten, her attention was called by other members of her family to a dog lying on the pavement, and on the following morning she saw the same dog go into Mr. Parkin's house. On the dog belonging to Mr. Parkin being shown her, witness said it was a similar one, but she could not swear it was the same. Dr. Smith, resident medical officer at the hospital named, deposed that the cause of death was Hydrophobia. He made a *post-mortem* examination, and found all the organs healthy, but congested. He was of opinion that the dog which attacked the deceased must have been mad. There was a large scar on the left arm, one on the face, and another on the leg, but they were hardly perceptible. The jury considered that the identity of the dog had not been established, and a verdict in accordance with the medical evidence was returned.

We publish this case, which is the most recent of several we have notes of, as corroborative, to some extent, of the opinion we gave with reference to the occurrence of Rabies from the bite of a non-rabid dog, which came under our personal observation, and was referred to in our last number. It would appear that the verdict of the jury was based on the medical

evidence, the physician evidently thinking that it required inoculation from a rabid dog to produce the disease. But in addition to the cases recorded in medical literature—home and foreign—which are opposed to this view, a remarkably well described and sufficiently convincing instance, one would think, was brought before the recent International Medical Congress by Dr. Putegat, of Luneville, and has just been published in the Brussels *Veterinary Journal* and the *Recueil* of Paris. This is a most important subject, and one well worthy of notice by those members of our profession who meet with outbreaks of Rabies.

SERIOUS ACCIDENT THROUGH PARTURIENT INFECTION.

THE *Wochenschrift für Thierheilkunde* relates an accident of a formidable kind to which veterinary obstetrists are exposed in assisting animals during parturition. District Veterinary Surgeon Seibert, of Pirmasens, in removing a calf, received an insignificant scratch on the middle finger of his right hand from its incisor teeth. In a few hours afterwards the fingers began to swell, and the tumefaction extended up the whole arm in a very formidable manner. Amputation of the fingers had to be resorted to, and for several days the patient's life was in great danger. Recovery did not take place for several weeks.

FOOT-AND-MOUTH DISEASE IN THE MALAY PENINSULA.

IN *Veterinary Sanitary Science and Police*, in describing the geographical distribution of Foot-and-mouth disease, we mentioned that it was well known in India and Ceylon, as well as in Burmah and the Straits Settlements. From the *Times* correspondent's letter of December 23 (*Times*, February 1, 1876) from Qualla Kangsa, Malay Peninsula, we learn that the military operations against the Malay insurgents had been greatly retarded from various causes:—"The Foot-and-mouth disease has been rife among the cattle, which has assisted to hamper the movements of the columns."

We do not know whether our countrymen at the Antipodes have, or are likely to have, any cattle relations with Singapore and the Straits Settlements; if they have, we would say, "Australian papers, please copy." Had the *Veterinary Journal* been in existence when the Contagious Pleuro-pneumonia of cattle was unknown in our great colony, we should have perhaps been able to sound the alarm, and so have prevented that serious contagion fixing itself like a cancer upon its agricultural prosperity. It may yet save itself from a scourge quite as serious, if it will accept timely warning.

RABIES IN YORKSHIRE.

THE *York Herald* mentions that several fatal and remarkable cases of Hydrophobia among animals have been reported from the neighbourhood of Richmond (Yorkshire). A large number of sheep supposed to have been bitten by a mad dog in December, have since become mad and died; while half a dozen dogs which exhibited symptoms of Rabies have been destroyed. Notices have been issued by the magistrates stopping, under heavy penalty, all dogs from roaming at large in the district.

TRICHINOSIS IN A WILD BOAR.

THE first case of Trichinosis discovered in wild swine, is recorded in Adam's *Wochenschrift für Thierheilkunde und Viehzucht*, No. 11. In February last year, a three to four-year old wild boar was shot in the Sachsaer Forest, and its flesh was brought to the veterinary inspector, Degenhardt, of Sachsa, who, on microscopical examination, found it greatly infested by *Trichinæ*. This fact was completely verified by other competent authorities, and proves that this serious parasitic affection is not confined solely to the domesticated pig.

ON A PARASITIC WORM OF THE HOUSE-FLY.

(*Proceedings of the Academy of Natural Sciences of Philadelphia*, 1874, p. 139.)

PROFESSOR LEIDY states that since it had become well known that many parasitic worms passed different stages of development within several different animals, he had from time to time sought for the sources whence the more common thread worms obtained entrance into the human body, but thus far without success. The *Trichina Spiralis*, discovered in man in 1833 by Mr. Hilton, and described and named by Professor Owen in 1835, was first found in the hog by Leidy (See Proceedings of Academy of Natural Sciences of Philadelphia, vol. iii., p. 108); but it was not until some years subsequently that it was determined that man and the hog acted reciprocally as hosts for the trichina in its different stages of development.

In examining various common animals of our household, Professor Leidy had found a thread worm infesting the common house-fly. The worm is from a line to the tenth of an inch long, and lives in the proboscis of the fly. It was found in numbers from one to three in about one fly in five. The parasite was first discovered in the house-fly in India, by the English naturalist Mr. H. J. Carter, who described it under the name of *Filaria muscæ*, and suggested the opinion that it might be the source of the Guinea worm, *Filaria medinensis*, in man. Mr. Carter states that he found from two to twenty worms in one fly of three. Dr. Diesing referred the parasite to a new genus with the name of *Habronema muscæ*. The singular position in which the worm lives suggests the many unsuspected places we have to search to find the parents or offspring of our own parasites.*

* Flies are the hosts or bearers of several animal and vegetable parasites, and it may be that some of these are only undergoing one of their stages in them before they are capable of domiciling themselves in the higher animals or in man himself. The parasitic fungus, *Empusa musci*, becomes greatly developed in the body of the house-fly, and finally destroys it. Another vegetable parasite, *Sphæria*, changes the body of the caterpillars, at whose expense it lives, into a fungus mass of a most grotesque shape, while a species of Botrytus produces the very deadly *Muscardine* of the silkworm tribe.—EDITOR *V. J.*

Reviews.

THE PRINCIPLES AND PRACTICE OF VETERINARY SURGERY. Second Edition. By W. Williams, M.R.C.V.S., F.R.S.E., etc. Edinburgh, 1875.

A work which has passed through a large edition in about three years, and particularly when we remember that it is not a book which is likely to be perused by many outside the veterinary profession, does not require much praise, and does not merit much adverse criticism from us, being almost in fact beyond the reach of both.

The second edition of Mr. Williams' "Veterinary Surgery" is in many respects an improvement on the first, while it is increased in size—as appears to be inevitable now-a-days, in all new editions of scientific manuals—by a considerable number of pages. The success of the first edition was due to the fact that it supplied a want which had been greatly felt since veterinary surgeons in this country began to acquire a taste for professional literature; the success of the second edition is deserved, because Mr. Williams has done his best to bring up the work to the standard of the present day, and in this way to meet the requirements of those who are anxious to keep advancing. It is the only treatise on veterinary surgery we possess in our language, and may therefore be designated a representative work; and as such it is viewed by continental writers on veterinary science, who frequently quote from it.

The plan of the work is the same as in the first edition, the only alterations we can perceive being in the form of excisions in some parts and additions in others, with new woodcuts and lithographs. The latter exhibit the excellent "face-cradle" devised by Mr. Walker of Bradford, and a "horse in slings."

Many of the subjects are, of course, very interesting to the surgical pathologist, and the majority are fully treated. Some of the conclusions arrived at are yet open to discussion; consequently, opinions differing more or less widely from those enunciated by the author might be expressed by those who have given much attention to this department of veterinary science. The pathogenesis of the malady we are accustomed to designate "Navicularthritis" is one of these, and Mr. Williams does not attempt to answer the arguments which have been opposed to his theory. "Foot-rot" in sheep is also declared to be a "non-contagious" malady.* It appears to be overlooked that there are two kinds of Foot-rot—a *non-virulent* and a *virulent*. The latter has been proved to exist by very many years of professional and non-professional observation, as well as by direct experiments conducted at different times by perfectly competent men in various parts of the world. These men have clearly pointed out the dissimilarities between the two diseases; and

* The chapter on "Foot-rot" in sheep in Mr. Williams' book appears, *literatim et verbatim*, in the February number of the *Veterinarian*, as a paper read before a Veterinary Medical Society in December last. The paper was not read by the author of the work now under review, nor is the work alluded to.

they would not be likely to mistake the irritation produced by an injury to the horn of the foot, produced by the contact of a mixture of moist epithelial cells and particles of dirt, for the pathological process set up within a certain period by smearing a small quantity of clean matter from the foot of a diseased sheep on the heel of a healthy one.

The evidence of most value and largest proportion unfortunately testifies that there is a transmissible kind of Foot-rot. Not only this, but a report quite recently issued by the Government of Schwytz, Switzerland, states that inoculation with the virus has been successful on the upper lip of healthy sheep, and this has been resorted to in order to induce a benignant form of the malady—a result which has been obtained, it would appear. We do not think experimentation has been attempted in this country. This is to be regretted, as it might have saved us from much useless surmising and speculation.

The chapters on diseases of the skin—especially those due to parasites—which were very incomplete in the first edition, are much improved and extended.

Altogether, the work is the result of an honest and praiseworthy endeavour to benefit the student and busy practitioner, and while it forms an excellent manual for the one, it will prove to the other a useful book of reference in doubt and difficulty. Mr. Williams has not been above adopting and acknowledging the practice and opinions of other authorities—no matter whether of his own or other countries. In this respect he cannot be charged with narrow-mindedness or self-sufficiency. Had he done otherwise, his book would have been of comparatively little value; for the opinions or experience of any one man—no matter how great his age or extensive his observations—cannot count for much in a science embracing so many different subjects. Our veterinary authorities are few, and have oftentimes to encounter every kind of discouragement, —sometimes gaining little beyond the consciousness of doing their duty. We have no doubt "Veterinary Surgery" will, in this new edition, prove as encouraging and as great a success as it has done in the old one. It at any rate well deserves it.

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

At a meeting of the Education Committee, held February 9th, 1876, Col. Sir F. Fitzwygram, Bart., President, in the Chair, the following Resolutions were agreed to.

1. "That the year be divided into three Terms, instead of one Winter and one Summer Session. That a Winter Session shall consist of two Terms of not less than three months each, and a Summer Session of not less than two months.

2. "That each candidate for the diploma of R.C.V.S. shall be subjected to and pass no less than three Examinations before obtaining his diploma."

3. "That no Student be eligible for the First Examination until he has studied three Terms."

4. "That no Student be eligible for his Second Examination until he has studied five Terms, nor unless he has studied two Terms after passing his First Examination."

5. "That no Student be eligible for his Third Examination until he has studied eight Terms, nor unless he has studied three Terms after passing his Second Examination."

6. "That at the First Examination, a Student be examined in Materia Medica, including the writing of prescriptions, and Botany (1 table, 2 Examiners), and in Chemistry (1 table, 2 Examiners)."

7. "That at the Second Examination, a Student be examined in Anatomy (1 table, 1 Examiner), Histology (1 table, 1 Examiner), Physiology (1 table, 1 Examiner)."

8. "That a Student at his Third or final Examination be examined on Morbid Anatomy and Pathology (1 table, 2 Examiners), Diseases of the Horse, including Veterinary Medicine and Surgery, Therapeutics, and Toxicology (1 table, 2 Examiners). Diseases of the other Domesticated Animals, including Veterinary Medicine, and treatment of disease in general (1 table, 2 Examiners). That the two latter Examinations shall be practical as well as theoretical."

9. "That each Student pay the sum of £3 3s. for each Examination, and £1 1s. for Registration on obtaining his diploma."

10. "That a rejected Student pay £3 3s. on each Re-examination." [Postponed.]

11. "That notice be given to all Students entering any Veterinary School, from and after the date of the adoption of this (or such plan as may be approved by the Council), that they enter subject to such rules and regulations as the Council may make regarding the period of study and Examination."

12. "That Examinations be held at such times as Council shall direct."

13. "That no Examination be held unless there are at least eight candidates for Examination."

14. "That the terms used by the Examiners be 'Good'; 'Sufficient'; 'Indifferent'; and 'Bad.'" [Under consideration.]

15. "That 'Bye-law 32' be added to the Series."

WM. HY. COATES, *Secretary.*

CENTRAL VETERINARY MEDICAL SOCIETY.

AT the ordinary meeting held at 10, Red Lion Square, Thursday evening, February 6th, at seven, the President, Mr. T. W. Gowing, sen., in the chair, the ballot was taken for Mr. Thos. Moore, M.R.C.V.S., Upper Berkeley Street, who was declared duly elected. Messrs. James Fraser, M.R.C.V.S., Newbury, Berks, and George South, jun., M.R.C.V.S., 40, New Bond Street, were proposed as Fellows.

Mr. Woodger, sen., then introduced the model of a cart intended to raise and remove fallen horses from the streets, etc. He stated that he had given the subject some attention, from having had a number of cases occur in his practice, and especially during the frost preceding last Christmas. He found the horses generally unable to rise, and in his opinion this was owing to a strain or partial rupture of the psoas muscles, the accident happening chiefly to foreign horses. From the great difficulty of getting these cases into the ordinary conveyances, and the pain caused during the attempt, he suggested

to the manager of the London General Omnibus Company (Mr. Church) the convertion of a conveyance of theirs according to his system. A model of this was shown. It consists of an ordinary cattle cart, 3 ft. 8 in. wide, 9 ft. in length, running on two small wheels, and having at the under-part of the shafts a windlass fixed, with two ropes of equal lengths, and furnished each with a hook at the end attached to the windlass. The latter is worked by a handle, and not by a bar, as in the knackers' cart. The back of the cart has a tail-board about eight feet in length, and set on hinges; and in the cart lies a *false bottom* composed of a thickly-padded cocoa-nut fibre cushion, with rings or "eyes" at each corner. The tail-board being lowered, the "cushion" is arranged to slide out over it, and be placed behind the head, neck, and back of the prostrate animal, the head being nearest the cart. The fore-legs being hobbled (the hind ones are powerless and are left free), three or four men pull the rope attached to the hobbles, and one which is fixed on the lower hind-leg; the horse is then turned over on to the cushion, the before-mentioned hooks being set in the eyes at the fore-part; and the whole is quickly drawn by the windlass into the bottom of the cart, and the tail-board fastened up. For removal therefrom, the tail-board is let down, and with the hooks set in the eyes at the back corners, it is drawn out—the animal being afterwards slung, or otherwise treated. In a trial made with a cart so converted, the results were satisfactory, the only drawback being in the width of the cart. It was therefore intended to construct one of five feet in width, and to run on four wheels. Mr. Woodger expressed a desire to receive any suggestions for improvements that might be thought necessary.

Mr. F. J. Mavor considered the cart a good one, and very simple; but thought it also needed the addition of slings, which could be best applied by raising the sides of the vehicle. He gave a detailed description of a cart used for the same purpose by him for many years. It was a low-bodied conveyance on four wheels, with corner-posts about seven feet in height, and leaning towards each other; these were surmounted by iron bars which gave attachment, laterally, to pulleys for slinging. The rollers of the slings were drawn under the prostrate animal, and the breeching fixed under and around him, when he was drawn in and slung up in the cart, where he could be retained at will. The sides were moveable, to facilitate his removal.

Mr. Roalfe Cox considered the false bottom the best form, and the whole contrivance as very useful. He suggested that as the assistance afforded in the streets was often very clumsy, there should be a roller round the girth, with a ring attached to fix the four legs to by separate chains, as well as a band round the neck to unite with them.

Mr. Woodger, jun., regarded Mr. Mavor's suggestion of slings as a good one, and that of Mr. Cox's with respect to the roller as also very good; but he did not think the neck-strap necessary. He believed that this cart had particular merits, as it did not entail any dragging about of the animal, nor did it occasion unnecessary pain; while the raising and removal were effected with a great saving of time.

Mr. Moore, sen., thought the usual hobbles quite sufficient, instead of other restraining means, and the cart altogether a very useful one.

Mr. Woodger, sen., believed that while the assistants were getting the roller under the horse, prior to slinging him into Mr. Mavor's cart, with the contrivance he exhibited the animal could be drawn in the carriage and enclosed—so easy were the appliances.

The general opinion of the Fellows present was that there was but little improvement required in the cart; and on the motion of Mr. Cox, seconded by the President, a unanimous vote of thanks was accorded to Mr. Woodger, sen.

The remainder of the time of the meeting was occupied in discussing two

cases of Asthma furnished by Mr. F. J. Mavor, who expressed great difficulty in his treatment of such cases.

The subject of Parturient Apoplexy was further adjourned, and the meeting concluded.

Present—seventeen Fellows, and one visitor.

JAMES ROWE, JUN., *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting and dinner for 1876 were held at the Queen's Hotel, Leeds, on Friday, the 28th of January, the President, Mr. Chas. Patterson, of Dewsbury, in the chair. The following members were also present, viz.:—T. Greaves, Manchester; Naylor and Fallding, Wakefield; Jas. Freeman, Hull; Anderton, Skipton; W. G. Schofield, Pontefract; Scriven, Aberford; P. Walker, Halifax; J. L. Faulkner, South Milford; Cuthbert, Broughton, and Murdock, Leeds. Excuses for non-attendance were received from Professor Williams, Messrs. Dray, J. S. Carter, Jno. Faulkner, Josh. and Jno. Freeman, Jno. Schofield, Ball, Peter Walker, and Ferguson. The minutes of the previous meeting were read and confirmed.

The Secretary proposed and Mr. Anderton seconded the election of Mr. Geo. Wm. Carter. This was carried unanimously.

Mr. W. G. Schofield nominated Mr. Daniel Spillman, of Womersley, and David Haigh, of Shepley, for membership.

Mr. Anderton proposed, and Mr. Greaves seconded, the motion "that a pair of Thompson's tooth shears, with Varnell's gag, be purchased for the use of the members of the Society; the instruments to remain in the possession of the Hon. Sec.; a member not to retain possession of them longer than seven days, and to pay the carriage to and fro."

The President read the Inaugural Address, wherein he strongly advocated the necessity for the young veterinary surgeon keeping up and improving the stock of professional learning acquired at the Veterinary Schools; also to improve his general and scientific knowledge, in order to keep up with the educational requirements of the times. He next reviewed the clauses of the Supplemental Charter, and thought that unless the clause enforcing pains and penalties upon usurpers of the title of "Veterinary Surgeon" was obtained, it would not be of much utility to the profession.

A discussion of the clauses of the Supplemental Charter took place, Mr. Greaves explaining the difference between an Act of Parliament and a Charter: clause 14 was the gist of the whole matter, but it could scarcely be expected that the clause would be granted in a Charter; he was strongly of opinion that a student who had not served an apprenticeship to a veterinary surgeon should remain an extra year at the Veterinary School before being eligible for examination. Mr. Greaves took the sense of the meeting "as to whether the time had arrived for the Examining Board being wholly constituted of veterinary surgeons;" there were nine yes, and three no. He also thought it imperative that a surgeon should obtain a year's practical education before becoming a M.R.C.V.S.

Mr. Broughton advocated a higher standard of education for the veterinary student; he thought it would be more beneficial to the profession if the Council were to apply for an Act of Parliament to extend the provisions of the Charter, the members of the veterinary societies using their influence with their representatives in parliament to support the Act, and the societies also to contribute towards the expenses of obtaining the Act.

Mr. Naylor was exceedingly anxious for a higher educational standard for the veterinary pupil; he thought that the Royal Agricultural Society might beneficially give a scholarship to each of the schools; he was of opinion that

the present site of the London School should be sold, and a farm a few miles from London purchased with the proceeds, where the students would have an opportunity of seeing cattle diseases, and a general mixed practice.

Messrs. Freeman, Anderton, and other gentlemen also addressed the meeting.

The members dined together. The usual Loyal and Veterinary Toasts were duly proposed and responded to.

THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE thirtieth meeting of the Midland Counties Veterinary Medical Association was held at the Hen and Chickens Hotel, Birmingham, on Tuesday, January 11th, 1876, the President, Mr. Greaves, Manchester, in the chair. There were present: George Fleming, Esq., Royal Engineers, Chatham; Messrs. F. Blakeway, Stourbridge; A. B. Proctor, Coventry; Stanley, sen., Stanley, jun., Parker, Tailby, and Hunt, Birmingham; Cartwright, Hill, and Beddard, Wolverhampton; Olver, Tamworth; Goulê, Malvern; Attwood, Bilston; Over, Rugby; Pyatt, jun., Nottingham; Bailey, Leicester; Trigger, Newcastle (Staff); Poyser, Ashbourne; Ison, Atherstone; and Litt, Shrewsbury.

After some preliminary business, the President called upon Mr. George Fleming to read his paper on the "Diagnosis of Glanders." The reading of the paper was listened to with marked attention.* The President, after complimenting the author of the essay for the exhaustive and masterly manner in which he had grappled with a subject of such vast importance, said that in the course of a long experience among some large studs of horses in Manchester, he at various times had to contend with Glanders, and had been baffled in getting rid of the infection, notwithstanding every possible attention and method had been adopted with regard to the sanitary condition of the stables, together with frequent and most careful inspection of each individual horse, and continued vigilance on the part of every one concerned. Notwithstanding all this, fresh cases kept cropping up, and this too when every horse having the slightest symptom had been removed. There must, then, be some undefined, unascertained, and mysterious cause of infection still existing in the stable; and he felt strongly inclined to the opinion enunciated by Mr. Fleming, that Glanders may exist in an animal, and this be capable of infecting others, notwithstanding there is no nasal discharge, no enlarged gland, and no ulceration. But such a horse would be unthrifty, have a cough, and could not endure labour; and in every stable such a horse should be not only looked upon with suspicion, but be removed out of the stable, and isolated from all other horses. He then called upon Mr. Stanley, sen., to open the discussion, which he did, and was followed by Messrs. Blakeway, Litt, Hunt, Parker, Bailey, Hill, Poyser, and several others. A most interesting discussion indeed it was; after which the essayist replied, in a succinct manner, to various points that had more particularly engaged the attention of the speakers. After a cordial vote of thanks were accorded to Mr. Fleming, and the election of four new members, the meeting terminated. The members subsequently dined together. On the whole this was the most successful, interesting, and enjoyable meeting the Midland Counties Association ever held.

* The paper is printed at page 189 of the present number of the *Veterinary Journal.*

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

AT the meeting of this Society on December 14th, Dr. Renton introduced the subject of Stenosis in a pig, and submitted for inspection the heart of an animal of this species. The organ had very marked vegetations around the nitral orifice, and the history of the case testified to great breathlessness before death.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THE usual fortnightly meeting of this Association was held in December last at the Veterinary College, D. McEachran, M.R.C.V.S., President, in the chair. There were present twenty-seven members and three visitors. A handsome donation of books was received from Mr. Williamson Bryden, V.S., Boston, for the Society's library. After the usual routine business, Mr. George Sermon, M.R.C.V.S., read a very instructive paper on Tetanus in the horse (lockjaw), which was followed by an animated discussion on the nature, causes, symptoms, and different modes of treating this fatal and often-recurring malady. The results of various experiments with different medicines, such as belladonna, hydrocyanic acid, Indian hemp, Calabar bean, chloroform, morphia, etc., by internal administration and subcutaneous injection, were discussed by different members present. The following facts may be deduced from the paper and discussion: viz., That Tetanus is a very fatal disease; that it is more fatal in old than in young animals; that the sooner it sets in after a wound, the more violent and fatal is the attack; that the medicines which have been most successful are hydrocyanic acid, belladonna, and Calabar bean; that amputation, when occurring from a wound, in an organ in which it is practicable—such as the tail—is advisable; that neurotomy is not beneficial in Tetanus in the lower animal. Mr. J. A. Couture, V.S., read a communication of a case in which the hoof of one of the hind-feet of a horse became detached without any apparent cause. Mr. Farley will read a paper at next meeting on "Diseases of the Digestive Organs."

VETERINARY COLLEGE, ONTARIO.

THE semi-annual examination in this Institution took place on December 22nd, 1875. The following gentlemen passed a successful examination, and received the diploma of the Agricultural and Arts Association:—Geo. Gouland, Seneca Falls, N.Y.; W. St. Clair Walker, Rice Lake; T. A. Hood, Drumquin; W. H. Hinman, Grafton; Jas. Elder, Rodgerville; R. D. Howard, Catile, N.Y. In the primary examination, Mr. W. W. Stewart, Sandhill, passed. Mr. A. Gunn passed on Materia Medica. Mr. John Beatty passed an excellent examination on the pathology of the horse and other domestic animals. The following gentlemen composed the board of examiners:—M. Barrett, M.D., Toronto; J. Thorburn, M.D., Toronto; E. T. Hagyard, V.S. Edin., Campbell's Cross; W. Cowan, V.S., Galt; J. S. Cæsar, V.S., Port Hope; T. Loyd, V.S., Newmarket; T. Wilson, V.S., London. Dr. Widdifield, M.P.P., Mr. McLeod, V.S., Jackson, Mich.; Mr. Grange, V.S., Guelph; and Mr J. P. Bond, V.S., Toronto, were also in attendance. Messrs. Howard and Hinman were highly complimented by the examiners; indeed, the students generally gave the utmost satisfaction, and the high standard of training to which they had been brought reflected great credit on their instructors. The *Toronto Mail* says:—"It would be an advantage to the farming community if they would send their sons for a season's instruction at this Institution, as the veterinary profession is daily increasing in importance, as it cannot

but do in this agricultural country. The Ontario Veterinary College was established in 1862 under the patronage of the Board of Agriculture by Dr. A. Smith, who is still in charge of the Institution. Although it has cost the country comparatively little, it has proved to be one of the most successful of its kind on the Continent, as is shown by the large number of students, not only from all parts of the Dominion, but from the United States, who avail themselves of its advantages. The graduates of the College have met with very great success in the practice of their profession, which is the best proof of the practical as well as the theoretical character of the discipline they receive there. Dr. Smith has a large number of anatomical specimens of of various animals, by means of which he illustrates the principles of his instruction. The present term of the College has been attended by upwards of thirty students."

We may add, that through the influence of the veterinary profession in Canada, an Act was passed in the Province making it an offence for any person to assume the title of veterinary surgeon, or any abbreviation thereof, unless he held a diploma from some recognised college. It may also be mentioned, as worthy of notice, with regard to the flourishing condition of our science among our kinsmen on the other side of the Atlantic, that the Ontario Veterinary Medical Association numbers nearly one hundred members.

ROYAL AGRICULTURAL SOCIETY.

AT the Council Meeting on February 2nd, the Hon. W. Egerton, M.P., Chairman of the Veterinary Committee, reported that the following letter had been received from the Clerk to the Privy Council :—

"PRIVY COUNCIL OFFICE (Veterinary Department),
"*January* 29, 1876.

"My Lord,—I have submitted to the Lords of the Council your letter of the 10th inst., addressed to the Lord President, applying for a special exemption from the Pleuro-pneumonia regulations for the purpose of making scientific investigations. I am directed by the Lords of the Council to inform you that they have no power to sanction the movement of animals affected with Pleuro-pneumonia, or of animals that have been herded with animals so affected, such movement, except for immediate slaughter, being contrary to the provisions of the Contagious Diseases (Animals) Act, 1869. I am to add, however, that their Lordships would be disposed to entertain a special application for the suspension of Article 32 of the Animals Order of 1875 in the case of any specified animal affected with Pleuro-pneumonia which the society may desire to retain alive for the purpose of scientific investigations.

"I am, my Lord, your Lordship's obedient servant,
"C. L. PEEL.

"The President of the Royal Agricultural Society of England,
"12, Hanover Square."

The Committee recommended that this letter be referred to Dr. Burdon-Sanderson, and that he be desired to report upon it, as well as upon the practicability of carrying out the proposed scientific inquiries, by hiring a shed containing animals affected with Pleuro-pneumonia, purchasing those animals, and obtaining permission from the Privy Council to keep the animals there without slaughter ; and at the same time carrying on investigations upon the diseased organs of animals at the Brown Institution.

The Committee received deputations from the Governors of the Royal Veterinary College, and from the Council of the Royal College of Veterinary Surgeons. The latter propounded a scheme for the examination of students

in cattle pathology, which should produce a competition between the best men educated in Scotland and England. The Committee recommended that, before accepting this proposal, they should communicate the terms to the directors of the Highland and Agricultural Society, and ascertain whether they were willing to contribute half of the expense.

PATHOLOGICAL SOCIETY OF DUBLIN.

WHEN this Society met on January 15th, Dr. Foot exhibited an interesting specimen of Intussusception of the ileum and cæcum from a dog. The animal had been a fine St. Bernard's, nine months old. During convalescence from an attack of Distemper, he had eaten the whole of a large spiced round of beef; and this act of indiscretion was speedily followed by an attack of Jaundice, to relieve which a dog-doctor prescribed a combination of aloes, jalap, and scammony. The first dose having only produced tenesmus and slight bloody discharge, the dose was repeated. The dog appeared to suffer much pain; there was no action from the bowels; the Icterus increased, as was noticeable in his eyes, gums, nails, groins, and axillæ. He died in three or four days after the exhibition of the purgative. About twelve inches of the ileum had been invaginated in the large intestine. There was a striking absence of Peritonitis and of adhesion between the layers of impacted intestine, —a matter to which Dr. Foot alluded, as pointed out by Mr. Jonathan Hutchinson, in reference to a similar specimen shown at the Pathological Society of London (*Transactions*, vol. xxvi., p. 249; 1875).

SHROPSHIRE CHAMBER OF AGRICULTURE.

A SPECIAL general meeting of this Chamber was held at Shrewsbury, on January 18th, to discuss the operation of the Contagious Diseases (Animals) Act. The discussion was opened by Mr. Litt, M.R.C.V.S., who read the following paper:—"The subject which we are met here to discuss to-day is the operation of the Contagious Diseases Act (Animals). There is perhaps no matter which so nearly concerns you as agriculturists, and it is, therefore, of the greatest possible importance that it should receive at your hands every attention and consideration, and that the discussion should be as full and exhaustive as time will permit. As time, however, is short, I will be as brief and concise as I can, consistently with doing justice to the subject which I have the honour to introduce to your notice. The Contagious Diseases Act (Animals) is an Act—I quote from the preamble of the Bill—'to consolidate, amend, and make perpetual the Acts for preventing the introduction or spreading of contagious or infectious diseases amongst cattle or other animals, in Great Britain.' It came into force on the 9th of August, 1869. The question, gentlemen, which we have to consider is, whether the Act has been successful in preventing, or even in any way modifying the introduction or the spread of contagious diseases amongst animals, or, in other words, whether you think that if this Act had not been in operation during the last half-dozen years we should have had a greater amount of disease present in the country, and that it would have spread with greater rapidity than has been the case. Now, gentlemen, I do not think that it requires any great amount of argument from me to show that the Act has not been successful in preventing the introduction and spreading of contagious diseases, and that it is thoroughly inefficient for the purposes for which it was framed. (Hear, hear.) The inexorable logic of facts proves this beyond the possibility of a doubt. (Hear, hear.) I have no hesitation in saying that during the six years and more that this Act has been in force, contagious diseases have been

doubly or trebly more prevalent than ever they were before. (Hear, hear.) But there is another point: the Act is not only ineffectual, it is oppressive and harassing in the highest degree to the stock-owner; and for this cause, if for no other, you as stock-owners and members of this Chamber should do all in your power to impress upon the Legislature the justice and the necessity of recognising your claims to consideration in the matter. (Applause.) The subject is perhaps not quite so fascinating to the politician as the Malt Tax, or the incidence of Local Taxation, but in my humble opinion it is infinitely more important both to you as agriculturists and to the community at large. The Central Chamber has declined, and I think very properly too, to send any more deputations to the Lord President of the Council, who is (with the best intentions I have no doubt) evasive in his replies, and the Premier has declined to trouble himself personally with the matter. As, therefore, the Government do not seem disposed to take anything like energetic action, it seems to me that it is high time that some other course was adopted; and it is for you, in conjunction with the Central Chamber and the other branches, to consider what that course shall be. (Hear, hear.) It would take more time than I have at my disposal to dwell at length on all the defects of the Act. I do not think it necessary that I should do so. I will merely content myself with pointing out those which appear to me to be most conspicuous. First of all, then, the Act does not apply to Ireland; and this, I consider, is a grievous injustice to the English breeders as (subject to a system of inspection at the Irish ports, which I have no hesitation in saying is absolutely useless and a complete farce) the Irish dealers are permitted to flood this country with store stock, which is the medium for disseminating Foot-and-mouth disease far and wide. (Hear, hear, and applause). Another great flaw is that the Act, after laying down certain regulations, and restrictions, leaves them in the hands of the local authorities (of which bodies there are, I believe, something like four hundred) to enforce them or not as they think proper. Now, if these restrictions are just and proper restrictions, and calculated to benefit the country at large, why leave it in the hands of any body or bodies to ignore or enforce them as they think proper, or otherwise? The result of this provision is simply this: that in some places the greatest apathy prevails; in others the powers which the Act gives are fairly exercised, but in very many districts the restrictions and regulations are carried out in the most rigorous manner, entailing upon the stock-owner serious losses, and subjecting him, in but too many cases, to the whim and caprice of some ignorant policeman, whose sole thought is as to how he can make up a case for a summons, and whose greatest pleasure it is to refuse his autocratic consent to the removal of animals from one field to another, or from the field to the nearest building, when the poor beasts are possibly dying for want of shelter. (Applause.) I have said that the operation of the act is oppressive and harassing to the farmer; and this is due perhaps as much to the system of inspection by police constables as to the Act itself, although the Act is responsible for omitting to state who are proper persons qualified to act as inspectors. It is difficult to me to believe that when the clause which empowers the local authority to appoint whomsoever they may think fit to act as inspectors was framed, that the framers of that clause ever contemplated the possibility of police constables being invested with the authority and powers which are placed in the hands of an inspector. (Hear, hear.) I will give you just one reason (if any such reason is wanting) to show why police constables should not be inspectors. The Act says that the certificate of an inspector of a local authority, to the effect that an animal within his district is affected with contagious disease, shall be conclusive evidence of the existence of such disease in all courts of justice. Now, I think it would be waste of time to discuss the question as to whether a policeman from his

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training and abilities is the proper person to certify as to the existence, or otherwise, of contagious disease. Clearly he is not. (Hear, hear.) The Duke of Richmond, the other day, in his speech at Chichester, when speaking of the operation of those regulations which are in force in Ireland, condemned the appointment of police officers as inspectors. His Grace did not seem to be aware that such a state of things was the almost invariable rule in this country; and yet His Grace is Lord President of the Council—that is to say, the official head of that department of the Government which deals with the subject of contagious diseases in animals. Now, gentlemen, these are some of the deficiencies in the operation of the Act; but there is a far greater one than any I have yet mentioned, and that is the utter failure of any of its provisions to check the introduction of these contagious diseases into the country. It will not be out of place here, perhaps, to consider for one moment what is the cause or origin of contagious diseases amongst our cattle. When I say contagious diseases I allude specially to Rinderpest, Pleuro-pneumonia, and Foot-and-mouth disease. Gentlemen, the answer to this question is contained in one word—Importation. (Applause). This is no theory: it is a fact. It is an undoubted fact, and has been proved over and over again, that the climatic and other conditions necessary for the spontaneous origin of these diseases do not exist in the British Islands. They do not exist any more than the conditions necessary for the production of Asiatic Cholera exist. I need not tell you that this is a disease which originates in Eastern countries, and every now and then comes westward in our direction, being clearly traceable along its whole route. It is a curious fact in the history of all plagues, both human and animal, that they originate in the east and travel westward. Well, as I have said, we import our contagious diseases, and if you admit this fact, I think there will be few of you who will be found to differ with me when I say, Abolish the importation of live cattle altogether. I have it on the authority of Mr. James Odams, and I believe there is no better authority in this kingdom, that the proportion of store stock imported is very trifling in proportion to that which is fit for the immediate use of the butcher. This being the case, I am at a loss to see how the meat supply of this country would suffer if importation was forbidden. What is to prevent the fat animals which are landed at our ports alive from being slaughtered abroad, and consigned to us as dead meat? As Professor Gamgee, in a paper read by him before the Midland Farmers' Club, in September last, so forcibly puts it, if Scotchmen prefer sending dead meat 540 miles from Aberdeen to London by sea, why cannot foreigners do the same from Hamburg, Rotterdam, or Antwerp, neither of which is so great a distance? (Hear, hear.) Gentlemen, this is a subject of such vast importance that there should be no compromise. (Hear, hear.) It is useless to slaughter at the ports of debarkation. (Hear, hear.) I care not what restrictions are enforced, or how perfect the system of port inspection may be, so long as we import live stock, so long shall have we contagious diseases. (Hear, hear.) Quarantine is useless, because it is perfectly impracticable to impose such a quarantine as will guard against the introduction of diseases whose period of incubation extends to months. The importation of live stock must be abolished. There is no alternative if the country is to be cleared of the animal plagues, which have imposed upon us the losses of millions of pounds, and which have done more than all the other causes put together to raise the price of meat—nearly a hundred per cent—in the last twenty-five years. (Hear, hear.) With regard to the subject of Pleuro-pneumonia and compulsory slaughter, I am of opinion that slaughter of infected animals, and all those which have been in contact with them, is a matter of necessity, if you wish to prevent the spreading of the disease when once it has broken out. To do this I think it is only right and just to make it to the advantage of the stock-owner to give immediate information of an

outbreak, and afford every assistance in his power to the authorities. This can be done by granting compensation in full for all animals compulsorily slaughtered. This would, after all, be only a small item in the county expenditure, and would be money well spent, as it would virtually be offering a premium, as it were, for the detection of infected centres and so facilitating the adoption of those means by which alone the disease can be eradicated. Gentlemen, I thank you very much for the kind attention which you have paid to these few and rather disjointed remarks. I feel that I have but very feebly treated the subject which has been entrusted to me, but I venture to hope that what I have said will elicit from you such an amount of discussion as shall lead to some tangible result. (Applause.)

The members, among whom was Mr. Dayns, M.R.C.V.S., in the discussion which followed, agreed with the opinions enunciated by Mr. Litt, to whom praise was awarded for his excellent paper.

Parliamentary Intelligence.

HOUSE OF LORDS, FEBRUARY 10, 1876.

The MARQUIS OF HUNTLY, in calling attention to the regulations of the Privy Council on the subject of the Cattle Disease, said they were in some respects at variance with the report of the committee of 1873. That committee recommended the withdrawal of all restrictions relating to the Foot-and-mouth Disease, but that recommendation had not been carried out. He approved of the steps which had been taken for increasing the number of inspectors, but considered it a blot on the present system that it should be left to the local authorities to decide whether something should be done or nothing. With respect to Pleuro-pneumonia, the committee recommended that the restrictions should be uniform in England, Scotland, and Ireland, but they had not been enforced in Scotland. He wished to ask the President of the Council whether it was intended to withdraw the present Privy Council regulations respecting the Foot-and-mouth Disease amongst cattle, and whether steps will be taken to place the regulations regarding cattle affected with Pleuro-pneumonia and other diseases upon the same footing in Ireland as in England.

The DUKE OF RICHMOND AND GORDON said that complaints from all parts of the kingdom were frequently brought under the notice of the Privy Council, whose desire was to do justice to all classes, and not to overlook the interests of the consumers throughout the country. The statement made by the noble Marquis was perfectly correct, and he would endeavour, as the noble Marquis had done, not to mix the consideration of the two diseases together, as was too often done at agricultural meetings. It was true that after the report of the Committee of the House of Commons the Privy Council revoked the orders which were then in force. Soon after this there was a noticeable increase of Foot-and-mouth Disease in the country, and he was pressed on many sides to put more stringent regulations into operation. He thought he would scarcely have been justified in ignoring the representations that were made to him, and accordingly an Order in Council was passed, which gave permission to the various local authorities to reimpose restrictions for the Foot-and-mouth Disease. Out of fifty-eight counties in England and Wales forty-one had imposed regulations, and of the Scotch counties twenty had adopted the same course. In regard, therefore, to the Foot-and-mouth Disease, it was not his intention to interfere with the Order in Council which now existed. He now came to the much more difficult subject of

Pleuro-pneumonia. In referring to this subject in the House in 1874 he alluded to the difficulties which existed in Ireland with regard to the question of compulsory slaughter. One of these difficulties was that the Privy Council in England had no power to deal with the Privy Council in Ireland; and another was that there was a great dearth of qualified veterinary inspectors in Ireland. He had never disguised from himself the importance of this question, and any man of common sense must admit that it was an anomalous state of things that there should be cumpulsory slaughter of animals affected with Pleuro-pneumonia in England, and that a different rule should prevail in Ireland. The Privy Council in Ireland was the local authority there, whereas the local authorities were spread over the whole country in England; and they were the persons who levied the rates, and who saw that money was not improperly expended. The subject had engaged the attention of the Government, and he felt happy to be able to tell the noble Marquis that the Government intended to enforce the compulsory slaughter of cattle affected with Pleuro-pneumonia in Ireland, and that his right hon. friend the Chief Secretary would state in the other House the mode and manner in which it was proposed to carry out the regulations for this purpose. (Hear, hear.)

LORD EMLY expressed his satisfaction with the course which the Government intended to take, and said it was a mistake to suppose that the farmers in Ireland were opposed to the slaughter of cattle affected with Pleuro-pneumonia.

The EARL OF KIMBERLEY believed that the regulations for the preventing of Foot-and-Mouth Disease would be of very little use unless they were extended to the whole country. When so large a number of the counties in England had adopted such regulations, the Government should consider whether they should not be applied to the whole country. He believed that the general opinion of agriculturists was either that there should be no regulations at all, or that they should be made more stringent with regard to Pleuro-pneumonia. He repudiated the idea that the agriculturists desired protection for the purpose of enhancing the price of meat. The increase in the price was more than balanced by the loss which they sustained from the disease.

HOUSE OF COMMONS, FEBRUARY 17, 1876.

In reply to a question from MR. BARCLAY, SIR M. HICKS-BEACH said:—For reasons which I have stated on previous occasions to the House, and which arise partly from the special circumstances of Ireland, but much more from the existing state of the law with regard to cattle diseases in that country, the Irish Government have felt unable to issue an order for the compulsory slaughter of animals affected with Pleuro-pneumonia. I hope in a few days to introduce a Bill proposing certain alterations in the law in order to meet the difficulties which have hitherto existed, and to enable us to secure uniformity of regulations on this subject throughout the United Kingdom.

CAPTAIN NOLAN asked the Chief Secretary for Ireland under what system veterinary advice would be afforded in Ireland to decide whether cattle reported to have been attacked by Pleuro-pneumonia are or are not affected with that disease.

SIR M. HICKS-BEACH said it would perhaps be more convenient that he should defer any statement on the subject until he introduced the Bill relating to it.

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Notes and News.

AMERICAN HORSES.—Apparently the better part of our history in regard to horses is in the future, says a recent number of the *New York Herald*, for although the past has its glories, and bright ones too, their full splendour it dimmed by relation with many facts not altogether satisfactory ; and as their best these glories were in a great degree local, while the Turf promises in the future to have with us the greater strength of a national interest and a national taste. There is an undoubted progress year by year. There are more races ; they are better managed, and excite a constantly greater interest ; they are better attended, and by people that formerly neglected this pastime altogether ; there are more "millions in it," and there is more taste for it than ever there was before ; and the effect on the breed of horses is very great. Indeed, the time is not far away when our stables will turn out the best horses in the world, and England will send here for good blood in the equine race as she now does for fresh blood in the finer strains of horned cattle. This will be mainly a consequence of natural facts, which the horse breeders will utilise. In England, the horse left to himself would become extinct ; in this country, left to himself he would thrive and improve ; for his natural habitat is a land of great plains with a dry continental climate, and the damp climate of England induces in the horse the same diseases of the respiratory organs of which it is so fruitful in man. In England, however, all animals increase in bone and muscle ; and this peculiarity of his English home has given the thoroughbred his splendid frame and size. Placed in a climate such as ours, where he retains these, and breathes an air almost as fine as that he breathed on his native plains, he must reach a perfection that may now seem only ideal ; and this is the immediate tendency, and must be the ultimate result, of the extensive introduction here of the best blood from British stables.

DOGS IN MISSOURI.—People with a turn for figures have a depressing habit of pointing out to their more thoughtless acquaintance that a shilling a day spent—we will say on a "buttonhole"—amounts at the end of the year to the rent of a nice cottage. In this spirit a Missouri journal publishes some suggestive statistics on the subject of keeping dogs, an expense which few are found to grudge. "Our 400,000 dogs," says this *censor morcs*, "furnish one of the most important economic considerations now affecting the State. In the first place, they mitigate against the mutton crop annually to the extent of at least 5,000,000 dols. ; secondly, they cost, at an average of 25 cents a week each, 6,500,000 dols.,—enough to run all our common schools and leave a large available surplus ; thirdly, they slay annually, through hydrophobia, at least one hundred and twenty persons, which at 5,000 dols. each—the average price paid by railroads for the very poorest of breaksmen—amounts to the further sum of 600,000 dols. Here is a direct expenditure of over 11,000,000 dols. for dogs, not to mention the fines, costs, and more remote sentimental damages, resulting from law-suits about dog-fights, and severance of friendship between the owners of combative curs. Capitalised our dogs represent a waste of 80,000,000 dols., and invested at compound interest, their worthlessness would pay off the national debt before 1900." This is all very well, but the world is not yet used by figures, and these very sad dogs in Missouri will long wag their tails in despite of them.

PRESERVATION OF DEAD MEAT.—According to the American papers, a remarkable success in the transportation of fresh meat has been achieved. A refrigerator car arrrived in New York from Chicago, containing 20,000 lbs. of fresh beef and a number of prairie chickens, all of which were in as good condition as when packed.

THE POTATO FUNGUS (*Peronospora infestans*).—One of the most important discoveries of recent times in vegetable microscopy has fallen to the lot of Mr. Worthington Smith, who has been the first to detect, or rather to determine, the resting-spore of *Peronospora infestans*. For this signal service to science the Council of the Royal Horticultural Society have unanimously conferred upon the discoverer the Gold Banksian Medal. It would be difficult to overrate the importance of this last step and final link in our knowledge of the life-history of the potato-fungus, and Mr. Smith may well be envied his good fortune in finding what has baffled the investigations of the most expert fungologists for so many years. Moreover, it is very gratifying at the present moment to be able to claim this honour for our countryman. Mr. Smith has published the results of his researches up to the date in the *Gardener's Chronicle* of July 12 and 17, and his paper is illustrated by his drawings from the microscope. A brief sketch of the history of inquiries into the nature of the organism attacking the potato-plant may be acceptable to some readers. As long ago as 1845 and 1846, Dr. Morren on the Continent, and the Rev. M. J. Berkeley in this country, declared their conviction that the disease was caused by a fungus. Montagne, who was one of the first to investigate the matter, does not appear to have held steadfastly to this view, though he was perfectly aware of the presence of the fungus in diseased haulm, and communicated drawings and observations to Mr. Berkeley which he incoporated in his paper published in the *Journal of the Horticultural Society* in 1846. Even at that date nearly as much was known of the life-history of this fungus as we knew previous to Mr. Smith's discovery, and soon the true nature of the conidia and zoospores was settled. Indeed, oospores (resting-spores) were seen and figured by Montagne—who, however, failed to recognise them as such, and gave them the name of Artotrogus. Mr. Smith has examined the preparations for the microscope made at the time, and declares the Artotrogus of Montagne and Berkeley to be identical with the bodies discovered by himself. The antheridia and oogonia are found on lateral branches of the mycelium within the tissue of the leaf; the former is ·0004, and the latter ·001, of an inch in diameter. The oosphere is fertilised by conjunction with an antheridium, the latter fixing itself to the former by a pollinodium or fecundating tube. This tube penetrates the oosphere, and discharges part of its contents into the protoplasm of the infant resting-spore. The mature oospore, or resting-spore, becomes free, and may lie dormant for some time; but the simple spores and zoospores, which are borne on slender threads protruding from the epidermis of the leaf, simply serve to propagate the fungus during the summer. Now that we know that the resting-spore of *Peronospora infestans* is actually produced in the haulm of the potato, and not exclusively on a different plant, as had been conjectured, there is a better chance of our being able to cope with it. One thing is certain: we cannot be too particular in burning affected haulm and tubers, and fresh ground should be preferred where there is a choice.

HOGS AND CRICKETS.—Out of Paradise Valley, Nevada, an approaching invasion of crickets recently caused considerable alarm among the farmers, who resolved, rather than let their crops be devoured by the ravenous insects, to give battle to them. For the purpose they marshalled together some four hundred hogs, placing them at the point the crickets first made their appearance, and right gallantly did these porcine warriors meet the enemy. For an hour they fought bravely, each of them devouring crickets at the rate of twenty or more a minute. They then withdrew to water, and after wallowing a short time, voluntarily renewed the battle, which was carried on far into the night. In a few days not a vestige of the invading army was to be seen, and the condition of the hogs improved materially. It is thought the hogs de-

stroyed, on an average, a thousand crickets a day each, and if within easy distance of water, a few hundred of them are capable of killing any number of crickets as fast as they advance.

ANIMAL STATISTICS IN FRANCE.—Some statistics have just been drawn up, showing that France possesses 2,900,000 horses, 390,000 donkeys, 320,000 mules, 10,000,000 head of horned cattle, of which 280,000 are bulls, 1,720,000 bullocks, 5,600,000 cows, 4,000,000 calves; 34,000,000 sheep, of which 25,000,000 are of the merino species; 1,300,000 goats and kids; 1,200,000 full-grown pigs, and 3,700,000 sucking pigs and young wild boars.

ARMY VETERINARY DEPARTMENT.

Gazette, February 8th, 1876.

G. F. Davis, gent., to be Veterinary-Surg. on probation, vice R. D. Graham, confirmed in his appointment.

ARMY SERVICE CORPS.—Veterinary Surg. of the first class W. A. Russell, from the Royal Artillery, to be Veterinary Surg., vice Veterinary Surg. of the First Class W. Death, promoted.

J. H. Steel, Veterinary Surg. on probation, leaves the army, having received the appointment of Assistant Demonstrator of Anatomy at the Royal Veterinary College. In one sense we regret this loss to the army, as Mr. Steel would, no doubt, have proved a valuable addition to the Department. It may be remembered that he obtained the Fitzwygram prize last year, though he laboured under the disadvantage of all the other graduates of his term at the Royal Veterinary College, in not knowing of the competition until only a few days before it took place; the authorities of the school having omitted to inform them. The army must indeed hold out little prospect to good men, when such an appointment as the above can tempt them to leave it.

J. W. B. Skoulding, Royal Horse Artillery, has been moved from Poona to Mean Meer; T. J. Lang, D Brigade R.H.A., from Newbridge to Dublin; F. C. Boulter, R.H.A., from Mhow to England, on leave; S. L. Pallin, from Ferozepore to England, on leave; and R. F. Frost from Mooltan to Jullundur. Veterinary Surg. J. J. Philips, R.H.A., has been transferred from Aldershot to Meerut to fill the vacancy caused by the resignation of Veterinary Surg. Moir.

Veterinary Surgs. A. C. Webb, A. Bostock, and M. Anderson have embarked for India.

Veterinary Surg. W. Walker, 15th Hussars, India, has leave to Bombay to appear before a medical board.

Obituary.

We have to record the demise of the following members of our profession: Mr. John Child, Swaffham, Norfolk; Mr. David Clark Emmott, Keighley; Mr. Henry David Pyatt, Nottingham. Mr. Pyatt was Veterinary Surgeon in the South Nottingham Yeomanry Cavalry.

Mr. John McMurrick, of Helensburgh, a student of the Edinburgh Veterinary College, who passed his minor examination in January last, has since died.

For the Continent, we have to chronicle the death of Dr. Carl Fraas, formerly Director of the Royal Veterinary School at Munich, and Professor

in the University of that city; and Veterinary Surg. Schrader of Hamburg. The latter was well-known as a scientific practitioner and writer, and in conjunction with Professor Hering, Director of the Royal Wurtemberg Veterinary School, published in 1863 the "Biographisch-literarisches Lexicon," a centenary volume to commemorate the founding of the Veterinary School at Lyons by Bourgelat. The work is dedicated "zur Secularfeier der Errichtung der ersten Thierarzneischule," and is a most important contribution to veterinary literature; containing, as it does, a very complete biographical notice of every writer who has added in any way to Veterinary science from the very earliest times up to the date of its publication, as well as of many who, although they did not write, yet occupied a prominent position as Veterinarians. The work is one of great merit and utility, and gives evidence of immense research and erudition. If it has a fault, it is in saying too much of some men whose services to our science were in inverse proportion to the space accorded them in the Lexicon.

The Veterinary profession in Russia has sustained a heavy loss in the decease, on the 28th of last October, of A. Unterberger, Ordinary Professor at the Imperial Veterinary School of Dorpat; thus making the second bereavement this school has suffered during last year, for we have already recorded the death of Professor Jessen. Professor Unterberger received his general education at the Riga Gymnasium, and studied from 1847 to 1851 at the Berlin Veterinary School. Soon after obtaining his diploma at Dorpat, he commenced practice in Riga, but in 1859 was appointed Adjoint-Professor at the last-named school, where, in 1862 he received the degree of "Magister" in Veterinary Medicine, and in 1869 was made Professor. Though at his death he was only forty-eight years of age, yet he was a Privy-Councillor and a Knight of the Order of Stanislaus.

Correspondence, etc.

TYPHOID FEVER IN MAN AND DISTEMPER IN THE DOG.

To the Editor of the VETERINARY JOURNAL.

SIR,—The contributor of an article to your contemporary of last month on the above subject, in quoting only a portion of the correspondence on which he based his remarks, has left out several strong links in the chain of evidence in favour of the *possibility* of the theory set forth (in the *Lancet*) by Messrs. "H.H.," and Smithard, having a good foundation. Being sceptical in the matter myself, I addressed the following letter to the *Lancet*:—

"Sir,—The communications published in your journal from 'H.H.' and Mr. Smithard, relative to the supposed connection between Distemper in the dog and Typhoid in man, open up a question of especial interest to us veterinary surgeons. Whilst fully admitting the possibility of such a mode of origin of Enteric Fever as that suggested by 'H.H.,' my experience of Distemper in the dog is that no fever of any kind has seemed to be communicated to any of the attendants on many cases, nor after *post-mortem* examinations thereof. A family employing a coachman, and calling upon a veterinary surgeon to attend upon a Newfoundland dog, would presumably occupy a *large* house. The family being from home, the coachman *slept* therein: the water-closet and cistern arrangements having been at comparative rest for some time, if they were as imperfect as they are in many large houses, might have allowed an emission of sewer gases, or contaminated the water supply, of which probably the coachman and his guest partook in some form or other; the coachman, imbibing (and perhaps inhaling) larger or

repeated quantities of the water or gas, or both, succumbed. If the house was subjected to the precautions which the occurrence of a case of Typhoid would render imperative before re-occupation, the non-appearance of further cases therein would not exclude my hypothesis that the Enteric Fever of the coachman and groom might be due to causes referable to the house. As the subject is one of undoubted importance, it would be satisfactory to be assured that the probable causes adverted to with respect to the house had been carefully eliminated.

"I am, Sir, yours faithfully,
"THOMAS PATON, V.S.,
"*Dublin, November* 17, 1875." "*Army Service Corps.*

To the above letter "H.H." courteously accorded the following reply :—

"Sir,—I have much pleasure in answering the questions put by your correspondent, Mr. T. Paton, and am glad to find that the subject has been taken up by him as a veterinary surgeon. Before communicating the evidence, I took every possible care to find out whether there could be any source other than that mentioned which could have produced the disease. I could find nothing, and therefore concluded that the dog alone was the source whence the poison came.

"The house is perfectly familiar to me, and therefore I can speak of the sanitary arrangements with confidence. The drainage was thoroughly looked to only about a year ago.

"The cesspool is ventilated by a pipe passing up above the roof of the house, and the closet is in an entirely distinct part of the house to that occupied by the man.

"The family had only left the house about three weeks before the man was attacked ; so there was no time for any alteration in the ordinary arrangements. The house was also occupied at the time by a housekeeper and several children ; but no one else was attacked, save his friend who visited him at the stable, and who was present when the stench was experienced.

"Immediately on discovering the nature of his disease, he was removed to his own room over the stable. No other cases have occurred in the neighbourhood ; so the evidence still points to the dog as the only source whence the poison was derived.

"I am, Sir, yours faithfully,
"*November* 27, 1875." "(Signed) H.H.

From the preceding you will perceive that "the doctrine enunciated by 'H.H.,' and sustained by Mr. Smithard," was not allowed to remain altogether uncontroverted ; and I am glad to find that it attracted the attention of a gentleman whose official position will afford him ample opportunities for thoroughly investigating the question.

As the causes of Enteric Fever in the human subject are said to be "drinking water or breathing air, impregnated with fæcal matter which has been *confined* in pipes or drains," and that "any kind of *imprisoned* fæcal matter will produce Enteric poison ;" therefore, it need not be that of an enteric patient It does not at first sight seem improbable that the sudden discharge of long retained fæces from the intestine of a carnivorous animal should be capable of producing Enteric Fever ; which, however, is contrary to all my experience. It is greatly to be regretted that no *post-mortem* examination was made of the dogs destroyed on the recommendation of Mr. Smithard, who would assuredly have found no difficulty in obtaining the co-operation of some of the intelligent veterinary surgeons of Cottonopolis.

Yours faithfully,
THOMAS PATON, V.S.,
Army Service Corps.

WHOLESOME (!) MEAT FOR THE ARMY.

SIR,—When on duty a few days ago, acting for a veterinary surgeon at the Barracks here (Ireland), the Commanding Officer made some remarks in reference to the beef supplied to the troops, and asked me to look at it, as the butcher was at that moment cutting up a carcase.

He inquired of the Sergeant what the contractor's price then was. He said, "It is now *fivepence per pound*, but fourpence-halfpenny was only paid a short time since."

I casually looked at the meat, but failed to discover the least trace of adipose matter. It was soft, flabby, and very dark in colour. The officer said, "We only expect to be supplied with *wholesome meat*." Now, who can pronounce meat, in *all* cases, to be wholesome? The effects produced by eating the flesh of old cows, or those which either die of disease or are slaughtered because suffering from one of the several incurable diseases to which they are liable, are not so speedy as would be noticed in the case of poison. If a man drank a pint of brandy at a draught, the effects would at once be apparent, and so would the result of eating a four-pound loaf at one meal be made evident.

It does not follow that, because the troops appear in pretty good health, they are consuming wholesome meat. I pay from *tenpence* to a *shilling* per pound for beef, and the butcher declares he makes but little by it. How, then, can the Government expect to be supplied with wholesome meat at fivepence per pound? I have every reason to believe that, *as a general rule*, the beef supplied to the troops, in the district in which I am located, is of the *worst* quality.

If qualified and *competent* men were appointed to inspect the animals as they are slaughtered, I have no doubt their reports would be anything but satisfactory.

"FIVE POINTS."

THE ETIOLOGY OF MILK FEVER.

SIR,—In your February number there appeared "A Theory upon the Etiology and Pathology of 'Milk Fever' in Cows, with some recommendations as to its curative treatment," by Professor Lyman; on which, with your permission, I purpose offering a few remarks.

The Professor's theory has at least one grand recommendation—that of simplicity. How consolatory to ourselves, and how easy to explain to others our want of success, should the theory of "Pyæmia" be correct! No difficulty then in explaining the high percentage of deaths—rather more, I should fancy, the large percentage of recoveries.

But suppose we accept the Professor's theory as correct: how does he explain the rapidity of the putrefactive process in a case where the pathognomonic symptoms of "Milk Fever" are fully developed four hours after calving? How does he explain away the fact that the shorter the time after calving in the disease making its appearance, the greater the fatality; when, should putrefaction be the cause, one would naturally expect the opposite to result? Why does the disease *never* supervene on "Adherent Placenta," when the fœtal membranes literally rot in the uterus? Or, more difficult still, how does he reconcile his "putrefactive," "Pyæmic," or "Septicæmic" theory with the undoubted fact that the well-known symptoms of "Milk Fever" are (not unfrequently) fully developed prior to calving? Where does the putrefaction then take place?

Then, again, where are the symptoms and *post-mortem* appearances of "Pyæmia"? Where the secondary inflammations, effusions, and abscesses?

Where even the Typhoid symptoms in a case that recovers as completely in twenty-four hours as if no disease had existed? How comes it that in the early stage blood-letting is had recourse to with such marked benefit? Is it so in "Pyæmia"? Do fifty per cent. of cases of "Pyæmia" recover?—which I consider only a fair percentage in "Milk Fever."

If "Milk Fever" be indeed "Pyæmia," then in comparison with the sister profession we stand pre-eminent; as I am sure her members cannot lay claim to a tithe of our success.

But I fear a great majority of the members of our profession will agree with me that the Professor's theory "won't hold water," and that the whole superstructure of professional adulation and congratulation must sink herewith.

I am not prepared to affirm that an animal poison generated in, or absorbed into the system shortly before, at, or immediately after, parturition, is *not* the cause of "Milk Fever." But, if such be the case, it must be a poison much more volatile and evanescent (as evidenced by the speedy recovery in favourable cases) than that implied when we use the term "Pyæmia" or "Septicæmia." In our present state of knowledge respecting the true pathology of the disease, I believe that, for all practical purposes, no theory has yet superseded the late Professor Barlow's, "the suspension of the secretion of milk;" though, should the poison theory be correct, might not the congestion of the brain and nerve-centres be the cause of "the suspension of the secretion of milk," instead of the suspended milk secretion being the cause of congestion of the brain, etc., as held by him?

Of Professor Lyman's treatment I cannot speak, never having tried it; but I consider it much more feasible than his theory. As far as my experience teaches me, there are chiefly two objects to be kept in view in its successful treatment—viz., to relieve congestion of the brain, and promote the secretion of milk; the former to be attempted by bleeding in the early stage, keeping the body in a proper position, applying cold water or ice continuously to the poll, avoidance of all strong purgatives, and the administration of medicines which have a tendency to relieve capillary congestion of that organ; the latter by frequent drawing of the teats, and the application of cloths wrung out of hot water to the udder.

I am, Sir, yours obediently,

February 7, 1876. "SCRUTATOR."

OZÆNA.

Professor Walley forwards the following Addendum to Case No. 1, alluded to in his communication on Ozæna in the last number of the *Veterinary Journal*:—

"The case progressed favourably up to the middle of December, when the aperture in the frontal sinus, which had been obliterated by organized granulations, again became patent, and permitted the exit of a large quantity of fœtid pus. Concluding from this unexpected outbreak that a portion of necrosed ethmoid bone, which I had failed to detect with my finger, was still imprisoned in the nasal chamber, I cast the horse and removed a pyramidal-shaped piece of the nasal and frontal bones—two and a half inches long by one and a half inches wide in its upper part—thus establishing a communication between the old aperture in the nasal and that in the frontal bone, and enabling me to explore the chamber with greater freedom.

"After a little search, I discovered several pieces of necrosed turbinated bone, which I removed; and after re-opening the aperture in the maxillary bone, the sinuses were thoroughly washed out, and a plug of tow saturated with creosote liniment inserted in the naso-frontal wound; the plug being

secured by an eight-tailed bandage. For several days the discharge was copious and excessively fœtid, but the horse is now (three weeks after the operation) at work, the discharge from the sinus being small in quantity and of a healthy character.

"The case is now all but well."

ANSWERS TO CORRESPONDENTS.

P. PERCIVAL.—The best means we know for getting rid of the application you mention, is saturating the part with glycerine, and removing the adhering matter gently and gradually as the skin softens.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from J. Barker, Bath; Professor Walley, Edinburgh; J. W. Hill, Wolverhampton; R. G. Walters, Newport, Salop; Professor Duguid, London; Professor McEachran, Montreal; "Scrutator"; A. E. Mac Gillivray, Banff; J. Lambert, 17th Lancers, Dublin; W. B. Walters, Inniskilling Dragoons, Newbridge; "H. D;" T. Paton, Army Service Corps, Dublin; A. Lawson, Manchester; "Cynic"; W. H. Coates; T. H. Simcocks, Drogheda; T. Moore, London; A. Lawson, Manchester; Sir F. Fitzwygram, Havant; W. Broughton, Leeds; R. Reynolds, Liverpool.

BOOKS: *Mambrini and Delprato,* Della Pleuro-pneumonite Specifica degli Animali Bovini; *Hartmann,* Patent Hufbuffer; *Marker and Leyder,* Recherches sur la Ventilation Naturelle et la Ventilation Artificielle; *Defays,* Les Ferrures Pathologique, etc.

JOURNALS: *Wochenschrift für Thierheilkunde,* etc; *Archiv. für Wissenschaftliche und Practische Thierheilkunde; Annales de Méd. Vétérinaire; Der Thierarzt; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Repertorium der Thierheilkunde; Recueil de Méd. Vétérinaire.*

NEWSPAPERS: *Rod and Gun* (late *American Sportsman*); *Midland Counties Express; Rappel; Doctor; Medical Press; Live Stock Journal; Montreal Evening Star; North British Agriculturist; Exeter and Plymouth Gazette; Manchester Courier; Agricultural Gazette; Portsmouth Times.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.